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A N N A L S
O F
A G R I C U L T U R E,
A N D
O T H E R U S E F U L A R T S.

COLLECTED AND PUBLISHED BY
ARTHUR YOUNG, Esq. F.R.S.

Honorary Member of the Societies of DUBLIN, BATH, YORK,
SALFORD and ODIHAM; the Philosophical and Literary
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BERNE; the Physical Society of ZURICH; the Palatine
Academy of Agriculture at MANHEIM; the Imperial
Œconomical Society established at PETERSBURGH;
And corresponding Member of the Royal
Society of Agriculture at PARIS; of
the Royal Academy of Agriculture
at FLORENCE; and of
the Patriotic Society
at MILAN.

V O L. VIII.

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A N N A L S
O F
A G R I C U L T U R E.

ON METEOROLOGY, AS APPLICABLE
TO HUSBANDRY.

Scorton, June 1787.

S I R,

IT is obvious from the effects of the weight and temperature of the air, upon the barometer and thermometer; that the same causes must operate at the same time upon the animal and vegetable kingdoms. If, therefore, the science of meteorology can be rendered subservient to the purposes of the husbandman, so as to enable him to prognosticate the changes of the weather, and the nature of these changes, it appears to me, that the philosopher should direct the farmers attention to such phænomena in the animal and vegetable kingdoms, as

may be found to predict such changes. For it is evident, that whatever the most unexceptionable theory, or even demonstration might effect—in the abstruse, scientific manner of *Mr. Kirwan*, in his late ingenious essay *on the temperature of different latitudes*, or the truly sagacious and indefatigable *Mr. de Luc*, in his repeated enquiries into the *modifications of the atmosphere*—it could not be accommodated to the comprehension of a common farmer, except in the way of popular corollaries or inferences. Undoubtedly, most of the physical phænomena of meteorology—properly so called, depend upon the incessant decomposition and re-composition of the expansible fluids contained in the atmosphere; yet if the philosopher, capable of accounting for these phænomena, cannot reduce his deductions from them into such language, as is intelligible to a common farmer, their utility must consequently be limited to those, who, perhaps, have least occasion to apply them to the exigencies of common life. If such be the case, it must be the ardent wish of every friend to the real interests of agriculture—an art universally acknowledged of the last importance to man—that philosophers, capable of executing the task with propriety, would condescend to direct the farmers attention to such obvious phænomena as might enable him to prognosticate the changes of the weather, which more immediately influence his most important operations.

tions. That such phænomena as would answer this desirable purpose, are exhibited in the animal and vegetable kingdoms, I flatter myself might be easily discovered by a judicious and attentive observer. And though the information derived from these sources, might not be so extensive, or afford so much time for application, as that deduced from the other, (supposing abilities for such deduction) the easiness of its application would more than compensate for this deficiency. For these reasons, I am fully persuaded, that the result of accurate observations, made upon the animal and vegetable kingdoms, and occasionally published in your Annals, till a mass of well-authenticated information were collected, sufficient to constitute a popular directory, to ascertain the changes of the weather, would be an important acquisition not only to agriculture, properly so called, but to all the most interesting operations of the farmer. From this investigation, I would by no means exclude the use of the barometer, thermometer, hygrometer, or any other instruments calculated to shew the changes in the state of the atmosphere; as I have sanguine hopes, that the appearances indicated by them, may be reduced to much greater accuracy and precision, by comparing them with the phænomena of nature, in the manner I am now recommending to the attentive observer, than can be collected from them at present. As to myself,

I can truly declare, that with the strictest attention, and some little meteorological knowledge, I have for many years examined and registered the indications of these instruments, without being able to make the least useful deduction from any of them as a farmer, or derive any scientific information from them, excepting the thermometer, as a philosopher. The common farmer, therefore, absolutely wants some easy certain rules to ascertain the changes of the weather, and the nature of these changes; for information in the latter case, it is in vain to consult any mechanical instruments. If then the animal, vegetable, and mineral kingdoms, particularly the two first, exhibit such appearances as indicate a change of weather, and by accurate and repeated observations we be enabled to prognosticate the nature of that change, we shall have a sure criterion of the weather from the vernal to the autumnal equinox, a season of prime importance to the farmer. We know from experience, particularly such of us as are of a delicate, irritable constitution, that changes of the weather affect us very sensibly; and analogy leaves us not the least reason to doubt, but that every beast, bird, and insect, are affected by the same causes, and, if attentively observed, would afford useful information with respect to these changes. Many vegetables too exhibit very curious and significant indications of atmospherical influences, and repeated observations
made

upon these, corrected and assisted by collateral observations made upon the other sources of meteorological information, would in time afford such certain and infallible rules for prognosticating the weather, as would not be far short of absolute demonstration. I hope no person will object to the unwarrantable extension I have given to the meaning of the word meteorology; I am conscious that what I am recommending to the attention of the philosophical observers of nature, is not properly the science of meteors, but of their effects; but if it be a more compendious, more popular, and consequently a more useful way of discovering the changes of the weather, the misapplication of a word will not, I hope, be considered as of much importance. When I add, that the *shepherd of Banbury's rules for judging of the weather*, should be examined, corrected, and extended, as an additional and important supplement to this plan, it may with propriety, be entitled meteorological.

If you think the preceding observations will tend to promote the interest of agriculture, I need make no apology for requesting you to publish them as soon as possible.

I am,

Sir,

Your's sincerely,

E. HOLMES

we not conclude, that this plant is naturalized in our climate, like all the other culmiferous and siliquous plants, which we cultivate, which bear the ordinary severity of winter's cold? I forgot to mention one circumstance respecting the buck-wheat, which is certainly of some consequence; that is, that it was harrowed in, and all the seed that was not covered, would undoubtedly be devoured by pidgeons, &c.

Your's, &c.

E. HOLMES.

ON THE MILDEW IN WHEAT.

SIR,

I perceive by several papers in your Annals of Agriculture, that the mildew in wheat is supposed to proceed from frost; but I cannot think that the cause, because it hath not happened in the parish where I live, which is very subject to mildew, when late frosts have been very severe, (instance three years ago when so much rye was destroyed) and because some particular parishes (Saffron-Walden &c.) and spots of land always mildew, and in others it is scarce ever known; surely if it was frost, similar situations would be affected alike, perhaps it may be said, that frost does not affect

affect every part of the country alike—granted—but then it must sometimes fall on the parts that are almost ever exempt from mildew.

Query. Are not insects that infest that particular sort of land, by depositing their eggs, or seed, at a particular period, in some part of the green wheat the cause? Early sowing doth certainly prevent mildew very much.—But what hath early sowing to do with frost? Is it not more likely that early sowing should cause the wheat to be in too forward a state to admit the seed of those insects at that particular period? Particular insects deposit their eggs in beans, while green, which do not arrive at maturity till long after the beans are housed; the insect then makes its way out of the bean leaving a round hole with a considerable diminution of the flour. Pease from the same cause produce a white maggot—nuts the same—mildew upon trees and shrubs, by different sorts of insects peculiar to each, from the various stages of vegetation—In short, do you know of any thing either in the brute or vegetable creation, that does not give birth to some vermin or other? Then why not an insect be the cause of mildew in grain? Much more may be said, but I think what is here supposed, sufficient to prime your reasoning upon the subject; and if the result should prove favourable to my idea, cannot you discover (from the numerous trials you have made of different composts) a compost that will destroy those

those insects, or cause, whatever it may be? Have your trials ever mildewed; do you recollect any particular compost that has regularly escaped mildews in your trials? Discover a cure for this one malady, and your country will be infinitely more obliged to you, than they would be to the man who should devise means to discharge the national debt, great as it is.

I was pleased at seeing an idea started by Mr. Le Blanc, and countenanced by you, respecting vegetables, &c. doing well, by being taken from better, and put to worse—I have long been of opinion, that hogs will thrive as fast with food *to a certain degree of quality* as with better; but what degree of quality that is, I am not able to determine, not having convenience (nor a weighing engine) for experiments, therefore must leave it to those who have—I always mix two thirds of shorts, with one of barley-meal, and find it answer very well.

Query. Whether nature can receive any benefit from food above a certain degree of quality? I think it of consequence to discover, whether it is so or not—and if not, what proportion of shorts, bran, &c. ought to be mixed with pease, rye, barley, &c. in order to reduce the food to its proper quality? What quality to begin, and what to finish with?

From your repeated determinations not to admit anonymous writers, I do not expect you to make any
public

public use of these observations. If they furnish you with any hint worth improving upon I shall be satisfied :—yet, I confess, I cannot see any good reason why a good observation or a useful discovery should be rejected, because its author does not choose to avow his name. Suppose one number in a given time was to be appropriated to the use of anonymous writers (and one for politics) subject nevertheless to their being run through the sieve of your experience, would it not be a number of some value? I perceive, that when an author gives his name, you think yourself bound to publish what he sends, be it what it may, (*i. e.* No. 15, on £30,000 and the shoot) I think your work as likely to suffer from this circumstance, as from the admission of anonymous observations, and more so, because, those may either be totally rejected, or their valuable parts only retained—and this is a liberty you ought to take with your avowed correspondents—No wise man can feel hurt at having a thing rejected that neither excites or conveys any real information ; as for those who do—you are better without than with—And now, Sir, I shall give you my reasons for not giving you my name.—First, because I cannot deliver my sentiments (such as they are) grammatically, not having had an education equal to the task : and because I am in such a situation, that if I was to point out any particular management whereby I was benefited, advantage would be taken of it !—Is it not possible to take

away

away the power of landlords taking an undue advantage of their tenants by fixing the prices of land (as the affize of bread is) quantity, quality, situation, and probable state of improvement considered?

I am, Sir,

with great esteem,

Z.

ON DRILLING.

[*By the same Gentleman as the paper, vol. 7. p. 308.*]

S I R,

BY Mr. Robinson's account of Mr. Duckett's method of husbandry vol. 7, p. 65, by making furrows with a plough and sowing broad-cast, (and as I am informed harrowing cros the furrows to cover the seed) it is certainly an easy method, where they have not a drill : and you say, in a note on Mr. Hinton's letter, vol. 7, p. 217, "nothing can do better than Mr. Duckett's method on his land."

That method requires to be more fully explained, as the expences, it appears, should be much more than the drilling, in seed and labour ; as he sows above one bushel, or one half more than by drilling.

And by the description, the furrowing three acres in a day is more than appears could be done, as

Mr,

Mr. Robinson says, p. 67, although it makes five drills it only compleats two at every bout.

If the drills are at one foot, or nine inches, this is no more than a common plough does : as at one bout, or two furrows ; a plough does two foot, or eighteen inches, and only does one acre in a day.

As a farmer of Mr. Ducket's reputation continues to practice the drilling or sowing in rows, it is a proof that he finds that method profitable ; and is a proof that will have more weight in favour of drilling, than twenty single experiments.

As of late we have seen many experiments made by the Rev. Mr. Cook's drill, where that sown by the drill was much superior to the broad-cast, although it is a proof of the advantage of that method, and Mr. Cook's drill. Mr. Ducket's method would be of use to those who cannot procure drills, or do not choose to be at so great an expence for one. And as every farmer does not agree in the same practice, neither will they approve of the same machine.

If drilling or sowing in rows is a profitable method, the more ways of doing it the better, to rule the different fancy of mankind.

As one who has a great opinion of the advantage of the drill husbandry, I join in wishing Mr. Robinson (if Mr. Ducket will not himself oblige the public by giving an account of his method) would give a full account of it, which at present he has left much in the dark, by what he has said of it.

In

In your last number, vol. 7, p. 213, Mr. Ruggles says "I obtained in the spring 1785, two bushels of a species of wheat which I had seen cultivated with success, &c. Last lady-day I finished sowing six acres of it. It was reaped the 3d of august and is just threshed. The produce is above twenty-five bushels an acre." As there is no date to the letter, it does not appear if the six acres were sown with these two bushels, or if sown with the produce of these; but the crop is so great, I must suppose it is from the produce, as one 150 bushels from 2, I cannot suppose. Your having this explained by your correspondent would oblige some of your readers, and am,

Sir,

Your most humble servant.

A FARMER.

EXPERIMENTS ON EXPELLING AIR FROM CALCAREOUS EARTHS.

By the Editor.

IN the paper on this subject, inserted in the preceding volume, p. 291, I endeavoured to shew what I thought a remarkable phænomenon, that chalk mixed with various soils gave much more air than such soils or the chalk would give separately tried.

tried. The result was at least remarkable enough to induce me very quickly to prosecute the enquiry : I shall now insert the further experiments I have made on this subject.

EXPERIMENT, No. 1.

Feb. 26, 1786. Powdered and mixed together two oz. of sandy loam from the field Great Pakes and two oz. of chalk marle; they gave 163 oz. measures, most of which was fixed air, but all with a mixture of inflammable..

Two oz. of the same earth off Pakes gave alone 52 oz. measures explosive; yellow white; more blue.

Two oz. of the same chalk marle gave 99 oz. measures of fixed air.

The proportion which should have been given by the mixture, was 26 for the earth and 50 for the chalk, together 76; instead of which it gave 163.

EXPERIMENT, No. 2.

Two ounces of rich wet sandy loam, april 1, 1786, gave 68 oz. measures most of it red; yellow; very sparkling; brilliant; some a heavy flame.

The same quantity of Newbury peat ashes gave 134, most of which extinguished a candle.

The

The average of four trials gave for the produce of the chalk, 37 oz. measures from 1 oz.

Thus mixed the three together, that is, 1 oz. of the same loam, half an oz. of the same ashes, and half an oz. of the same chalk being pounded together, gave 186 measures, about half of it explosive; the rest not so, but inflammable; blue, lambent. The ingredients separate, gave 86 measures; together they give 186.

EXPERIMENT, No. 3.

April 5, 1786. Two ounces of sand from Cavenham, suppose value 5s. per acre, gave 3 oz. measures.

Mixed 1 oz. of this sand with half an oz. Newbury peat ashes, and half an oz. chalk; they gave 194 measures.

Taking the ashes as in the preceding trial, these specimens, separate, gave 54; instead of which, they give together 194.

EXPERIMENT, No. 4.

April 7, 1786. Two ounces of clay, from a deep furrow, gave 51 oz. measures, very explosive; green; sparkling; brilliant.

One oz. of the same clay pounded, with half an oz. of chalk, and half an oz. of peat ashes, gave
152 mea-

152 meafures, moft of it not inflammable, and the reft flightly fo.

| | | | | |
|-----------|---|-----------------|---|-----------------------------------|
| The clay | - | $25\frac{1}{2}$ | } | 77 $\frac{1}{2}$, but mixed 152. |
| The chalk | - | $18\frac{1}{2}$ | | |
| The afhes | - | $33\frac{1}{2}$ | | |

E X P E R I M E N T, No. 5.

The fame day, one ounce of the Cavenham 5s. fand; $\frac{1}{2}$ an oz. heavy, folid Newbury peat, and $\frac{1}{2}$ an oz. chalk pounded together, gave 441 meafures, fome fixed; moft of it explofive; red; white; yellow; blue; fparkling.

One ounce of the peat alone, gave 277, moftly explofive; red; green; yellow; blue; fome burning.

| | | | | |
|-----------|---|------------------|---|------------------------------------|
| The fand | - | $1\frac{1}{2}$ | } | 158 $\frac{1}{2}$, but it is 441. |
| The peat | - | $138\frac{1}{2}$ | | |
| The chalk | - | $18\frac{1}{2}$ | | |

E X P E R I M E N T, No. 6.

April 29. Pounded together $\frac{1}{2}$ an oz. of peat, $\frac{1}{2}$ an oz. Cavenham 5s. fand, and $\frac{1}{2}$ an oz. of chalk: kept them in a cupboard till Sept. 14, then tried them in the gun barrel. The produce 312 meafures.

A fimilar mixture gave at firft 441, but by keeping, much lefs: there being only $\frac{1}{2}$ an oz. of the fand, fhould have caufed it to yield more air.

EXPERIMENT, No. 7.

April 8. By variations to examine on what circumstances this surprising difference depended, tried 1 oz. of the same sand, with half an oz. of the peat, leaving out the chalk. It yielded 116 oz. measures. Hence, adding sand to the peat, made it yield less air than it would have done without addition.

EXPERIMENT, No. 8.

Next tried the chalk and peat, leaving out the sand. Half an oz. of each pounded together. They gave 455 measures.

| | | | |
|-----------|---|------------------|-----------------------|
| The peat | - | $138\frac{1}{2}$ | } 157 instead of 455. |
| The chalk | - | $18\frac{1}{2}$ | |

Hence, it was very evident, that the increase of the quantity of air depended on the chalk.

EXPERIMENT, No. 9.

This however is not always the case: for repeating this experiment, May 6, with similar (but not the same) peat $\frac{1}{2}$ an oz. of it, and $\frac{1}{2}$ an oz. chalk, gave 302 measures. But 1 oz. of the same peat, gave 327. But that there was a difference in the peat, appeared from the colour and nature of the flame:

flame : there was in this less fixed air : the flame redder ; the epithets *heavy* and *burning*, are in the notes, but not in the former.—I have scarcely met with another instance besides this of an addition of chalk not causing an addition of the quantity of air.

E X P E R I M E N T, No. 10.

May 3, 1786. In order to see if the addition of alkaline salts would be attended with a similar effect, I mixed 1 oz. of rich sandy loam, with half an oz. of salt of tartar. They gave 124 oz. measures inflammable ; blue ; most of it not explosive.

Two ounces of the same earth tried alone, gave 70 measures.

Half an ounce salt of tartar, gave 15.

| | | | | |
|------------|---|----|---|--------------------|
| The earth | - | 35 | } | 50 instead of 124. |
| The tartar | - | 15 | | |

E X P E R I M E N T, No. 11.

One ounce of the same earth, half oz. of peat, half oz. of chalk, and half oz. salt of tartar pounded together ; two ounces of the mixture, gave 281 oz. measures.

The chalk and peat - 455

The earth and tartar - 124

5)579

115

464 instead of 281.

Every thing added therefore to chalk and peat, lessens their power of yielding air.

EXPERIMENT, No. 12.

May 15. Half an ounce of peat, and half an ounce salt of tartar pounded together, yielding 244 ounce measures.

| | | | |
|------------|---|-------------------|-------------------------------------|
| The peat | - | 138 $\frac{1}{2}$ | } 143 $\frac{1}{2}$ instead of 244. |
| The tartar | - | 15 | |

EXPERIMENT, No. 13.

Half an ounce of pearl-ash alone in the barrel, gave 45 ounce measures, half fixed ; half in blue lambent.

One ounce of the same good loam pounded, with half an ounce of pearl-ash, gave 72 measures.

| | | | |
|---------------|---|----|---------------------|
| The earth | - | 35 | } 80 instead of 72. |
| The pearl-ash | - | 45 | |

EXPERIMENT, No. 14.

Half an ounce of barilla, gave alone 93 ounce measures.

One ounce of the same earth pounded with half an ounce of barilla, yielded 65.

| | | | |
|-------------|---|----|----------------------|
| The earth | - | 35 | } 128 instead of 65. |
| The barilla | - | 93 | |

These substances, therefore, seem to lessen the power of yielding air, but tartar to increase it.

EXPE -

E X P E R I M E N T, No. 15.

Sept. 12, 1786. One ounce of rich soil, from the Isle of Foulness, gave 61 ounce measures, explosive; green; yellow; white; sparkling, and brilliant.

One ounce of hard chalk, yielded 13 ounce measures of fixed air.

Half an ounce of the same chalk, and half an ounce of the same Foulness earth pounded together, gave 106 measures, inflammable; half not explosive; blue.

| | | | | | |
|-------|---|---|-----------------|---|--------------------|
| Earth | - | - | $30\frac{1}{2}$ | } | 37 instead of 106. |
| Chalk | - | - | $6\frac{1}{2}$ | | |

E X P E R I M E N T, No. 16.

Reflecting on this circumstance of chalk being mixed with other bodies, enabling them or itself to yield so much air, I apprehended that it must be either an absorption of atmospheric air in the act of mixing, or else, that the particles of the earth being intimately insinuated amongst those of the chalk, enabled the heat to penetrate the mass so much the easier as to have this effect; and that the result might really be nothing more than getting a larger portion of the air from the chalk, by means of a different application of heat: To see if this was really the case, Dec. 13, 1786, being provided with a

much more powerful furnace than the preceding experiments were tried in one of Mr. Wedgwood's admirable thermometers, by means of which I could be sure of my heat being always equal, I tried one ounce of fine chalk, powdered and sifted, it gave 197 ounce measures of fixed air.

I then took half an ounce of the same sifted chalk, and half an ounce of pounded and sifted fragments of Mr. Wedgwood's retorts which I had found to yield no air, and pounded them well together. This mixture yielded 121 measures, being tried in the same barrel as the chalk had been. But the production of the air suddenly ceasing, I repeated the trial with another barrel, fearing a failure of the former one; the apprehension, however, was erroneous, for I got only 114. Thermometer in both 32.

Half an ounce of the chalk alone $98\frac{1}{2}$

Ditto with addition of retort 121.

Hence, then, it appears, that the addition of the pounded retort has some effect of the nature I expected; but the amount will by no means account for the much greater differences of the preceding trials.

EXPERIMENT, No. 17.

In order further to examine this point, I next took, Jan. 22, 1787, half an ounce of the same chalk and half an ounce of pounded and sifted flint,
that

that had been burned several times, it gave 111 oz. measures, or $12\frac{1}{2}$ more than the chalk alone.

EXPERIMENT, No. 18.

Half an ounce of the chalk and half an ounce of pounded and sifted stone crucible fragments, gave 123 measures, or $24\frac{1}{2}$ more than the chalk alone.

EXPERIMENT, No. 19.

Half an ounce of the chalk and half an ounce of burnt sand, kept half an hour in a white heat in a crucible, and mixed as soon as cold, gave 104 ounce measures, or $5\frac{1}{2}$ more than the chalk alone.

From these trials it appears, that the mixture of the addition, which of itself gives no air, enables the heat to operate more powerfully on the chalk, and makes it yield somewhat more air; but the effect is not considerable enough to account by this mechanical operation for the very great superiority, when soils of themselves productive are thus mixed. The quantity of air given in this case is so much greater that this result by no means accounts for it.

EXPERIMENT, No. 20.

In order to examine if the calcareous earth in a very rich red marle from Cheshire, would have the same effect as chalk, I took first one ounce of the marle by itself, which yielded 43 measures, slightly inflammable; blue; lambent.

EXPERIMENT, No. 21.

One ounce of sandy loam dry, on a gravelly bottom, from Broomfield, gave 24 measures.

Half an ounce of this loam and half an ounce of the red marle pounded together, 57 measures.

| | | | | |
|-------|---|----|-----------------|---------------------------------|
| Marle | - | .. | $21\frac{1}{2}$ | } $33\frac{1}{2}$ instead of 57 |
| Loam | - | - | 12 | |

To examine if chalk would have a greater effect on the soil, half an ounce of each pounded together gave 113 measures. The same day, Jan. 24, 1787, the chalk alone gave, per ounce, 191.

| | | | | |
|-------|---|---|-----------------|------------------------------------|
| Chalk | - | - | $95\frac{1}{2}$ | } $107\frac{1}{2}$ instead of 113. |
| Loam | - | - | 12 | |

From whence it should seem, that on this soil the marle has a greater effect than the chalk, but both add to the quantity of air.

EXPERIMENT, No. 22.

Half an ounce of red marle and half an ounce pounded and sifted crucible gave 39 measures. The addition acting mechanically in this instance enabled the marle to give vastly more air than alone.

To see if alkaline additions would have any particular effect I tried the following :

EXPE-

E X P E R I M E N T, No. 23.

Jan. 5, 1785. To 2 ounces of clay from the bottom of a furrow, kept some time in the laboratory, and pounded, I added 7 dwt. of spirit of sal ammoniac, and put it in the barrel in the wood fire. The same to another ounce and set it abroad in the frost. The first gave 55 measures, cloudy; very explosive; and coloured.

Two ounces of the same clay, without addition, 40 clear.

Feb. 26. Tried the 2 ounces that had been abroad; got only 4 ounce measures; to what to attribute the difference I know not; I find in the minute of the experiment no mention of a suspicion of the barrel not being air-tight.

E X P E R I M E N T, No. 24.

Feb. 27, 1785. Weighed and powdered fine, 6 ounces of the loam of Great Pakes that had been some time in the laboratory. Divided it into three equal parts. Added to one, 7 dwt. spirit of sal ammoniac, and set it out in a sharp east-wind and frost, kept the other two in the laboratory.

March 14th. Tried the two ounces that had been abroad, they gave 11 ounce measures.

Two ounces of that kept in the laboratory gave 52. Two other ounces with 7 dwt. spirit of sal ammoniac

ammoniac 15, which appeared so extraordinary, that in the same barrel tried 2 ounces of the earth again, without addition, it gave 55. The same materials without the sal ammoniac gave 194.

EXPERIMENT, No. 25.

March 14, 1785. One ounce chalk and 1 ounce furrow clay, pounded fine together, gave $14\frac{1}{2}$ measures.

The same with the addition of 7 dwt. spirit of sal ammoniac, 79 measures.

EXPERIMENT, No. 26.

April 5, 1786. Pounded and mixed together,

| | |
|---------------------|------------------------|
| 1 oz. poor ss. sand | } and added 7 dwt. sp. |
| 10 dwt. peat-ash | |
| 10 dwt. chalk | |

sal ammoniac.

gave 166 oz. measures.

EXPERIMENT, No. 27.

May 5, 1786. The same materials as the preceding experiment, but with 7 dwt. common water instead of the spirit of sal ammoniac, gave 173 measures.

EXPERIMENT, No. 28.

May 6, 1786. Half an ounce of chalk and half an ounce of peat pounded and mixed with $3\frac{1}{2}$ dwt. of the spirit of sal ammoniac, gave 140 measures. The same materials dry, gave 302.

EXPE-

EXPERIMENT, No. 29.

The same day, 1 ounce of peat moistened with 4 dwt. of the spirit of sal ammoniac, gave 259 measures. And the same peat dry, gave 327.

EXPERIMENT, No. 30.

May 8. One ounce of Mr. Le Blanc's 5s. sand, dry, gave 12 measures. One ounce moistened with $3\frac{1}{2}$ dwt. of the spirit of sal ammoniac, gave 35.

EXPERIMENT, No. 31.

May 10. One ounce of red marle dry, gave 55 measures. One ounce of moisture with $3\frac{1}{2}$ dwt. of the spirit of sal ammoniac, gave 125 measures.

EXPERIMENT, No. 32.

The same day, 1 ounce of burnt earth of former experiments, tried dry, gave 15 measures. The same moistened with $3\frac{1}{2}$ dwt. of the spirit of sal ammoniac, gave 12 measures.

EXPERIMENT, No. 33.

One ounce of chalk moistened with $3\frac{1}{2}$ dwt. of the spirit of sal ammoniac, gave 50 measures. One ounce dry, gave 27.

From these experiments, there appears to be a remarkable effect attending the spirit of sal ammoniac

niac lessening the quantity of air, and to a degree, in several instances, that seems surprising. For want of the necessary apparatus, I can only conjecture the cause. If the air was received in mercury, the result would probably be different; for heat converts the volatile spirit into alkaline air, which is absorbed by the water; and the earths being moistened, and, consequently, partially coagulated together, the fire has not so great a power on them, as when they are put dry into it; I do not think, however, that this reasoning fully accounts for so very great a difference, as there was in some of the experiments.

EXPERIMENT ON MAKING PARME- SAN CHEESE.

By Charles Mordaunt, Esq.

Halfall, April, 1787.

S I R,

I FIND my letter inserted in your last number. There are some errata in the print. Our marle carts are a sort of half cart, drawn by two horses, the load I suppose about one ton, as much as they can draw up the Pit Race.

You say, sheep in Ireland feed on the vitriolic lands in that island without detriment; therefore, attribute

attribute that disease to some cause of a different nature ; also that forge water is given as a remedy ; forge water must be a powerful alkaline ; vitriol a sharp acid ; consequently, nothing decisive appears. It is not sheep only that suffer by this pernicious quality of our pastures. I am told, the deer in Knowly park, die in great numbers of the same or like disease after wet summers, but this I know only by report, and that the strata of the soil are coal strata, perhaps that may lead to investigation.

We now arrive at an article of more consequence to us—the dairy for cheese.

I think I mentioned a trial to imitate the Parmesan dairy. Last week, ninety-four quarts of milk, made a Lodesan cheese of eight pound ; the same quantity a common cheese of ninety-four pounds : the result was curious ; both left the same quantity of whey ; that of the Lodesan was thick and rich in butter or cheese substance, the other, common whey ; they endeavoured to make a second cheese of the Lodesan whey—labour in vain—no cheese could be made—it was heated and cooled, cooled and heated ; no cheese produced, and whey only fit for the pigs or dogs, from the saffron ; you may depend, this is a fact, however strange and unaccountable. What is there peculiar in the climate of Italy, to enable the Italians to make their second cheese ? This experiment accounts for the high price of that sort of cheese. The market price of cheese at
Liverpool

Liverpool is four-pence the pound, of 15 ounces; therefore, the Lodesan should sell at about eighteen-pence to equal the other in profit; by this estimate the Italians may undersell our markets in this article, considering additional trouble and the cost of saffron.

As the dairy business is quite out of my way, provided you want more particular information, you must apply to Mrs. Jefferies, the housekeeper who directs the management this year; the dairy is twelve milking cows; I intend having half a dozen Guernsey cows on trial; with a bull to cross the large black Scotch cows. What is your opinion of that cross breed? *

You shall have soils as you desire, with some of our best marle, which I fancy is unknown in other parts of England, I wish you had the same in Suffolk, with a thousand good tons on an acre. I have sowed two acres of carrots.

From your humble servant,

CHARLES MORDAUNT.

* I beg Mr. Mordaunt will procure from Mrs. Jefferies a much more particular account of his curious dairy experiment in its whole detail. I have no doubt but the proposed cross will answer, if the bull be well chosen.

A. Y.

A TOUR IN WALES, &c.

By the Editor.

OCTOBER 23, 1776, ‡ landed at Milford haven from Ireland. About the haven the country is chiefly in tillage; the soil a good red-dish loam on a red grit stone. They have clover, but no turnips. The whole country as bare of trees as Ireland. Viewed the haven from the high lands above Hubberston: it is a noble bason here, with hanging shores, that want nothing but wood. Sixteen ships added greatly to the scene.

Making enquiries concerning Pembrokeeshire in general, the Rev. Mr. Hall, who resided much in it, informed me, that one third of the county is mountain; and that the other two thirds let from 10s. to 20s. an acre; average 15s. That a part of it consisted of a very fine red loam at 20s. excellent for every sort of crop: the other parts clay, or clayey, with a tract to the south of lime stone land. The course of crops most common:

1. Plough up grass land for fallow and lime,
2. Wheat,
3. Pease or barley,
4. Barley or oats,

‡ I travelled the same country again in december, 1778, and taking fresh minutes, have drawn up this account from both.

5. Oats,

5. Oats,

6. Leave it to grafs and weeds for 5 or 7 years, but few sowing clover.

It is surprising how, with such a rotation, they are able to pay such rents. Farms in general are so small that £100 a year is a considerable one. The whole county is inclosed, without such a thing as a common field. The food of the poor, bread and cheese, with broth made of salt meat, laid in at the cheapest season; much fish also eaten by them. Many keep cows; no goats on the mountains.

To Haverford-West, the soil a rich reddish loam on slate and clay. I remarked some wheat on clover. Lime the manure, but not in any quantities.

Half oxen and half horses universal in all the teams. The cottages many of them not a whit better than Irish cabbins, without an equal show of pigs, poultry and cows. Labour 8d. in the winter, and 10d. in summer, the year round. The whole country is in gentle inequalities; and, if wooded, would be beautiful.

PROVISIONS.

Mutton, 3d. per lb.

Beef, 3d. to 5d.

Pork, 3d.

Butter 6d. to 8d.

Chickens,

Chickens, 4d. to 6d.

Turkies, 3s. to 4s.

Geese, 10d. to 10½d.

Potatoes, 2s. to 2s. 6d. a bushel.

The town of Haverford is on so steep a hill, that necks must sometimes be broken in passing it.

To Narbarth. Several cottages building in the Irish way, of mud with straw. The poor people seem well cloathed and fed. They use through all this country small heavy carts with two oxen and two or three horses, the driver sits on the front of the cart, and drives with reins.

Their car is a two-wheeled skeleton, one for corn and hay, but boarded for lime, &c. Has a pole for oxen, two horses draw four barrels of lime, two horses and two oxen five of lime or culm, which is truly ridiculous, much inferior to the Irish car.

The country is generally in tillage, and ploughed tolerably well, but in the low lands good meadow; and I saw some woods. Scarcely any such thing as waste land.

At Slabbard, in the way to Narbarth, rents are from 15s. to 20s. an acre; some rich meadows at 40s. The course of crops,

1. Fallow,

2. Wheat produces 3 to 4 bushels each, at 12 gallons to a strike, and 4 strikes to a bushel,

3. Barley ditto 6 or 7 ditto,

4. Oats 5 or 6 ditto,

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5. Clover

5. Clover 2 or 3 years,

Customary acre $\frac{1}{4}$ th more than statute.

Wheat yields 7 for 1, on some farms 12 for 1.

Lime they measure by the Irish barrel of 4 bushels, lay 60 an acre on the fallows. It costs 2s. 6d. a load of 5 barrels, and is burnt in perpetual kilns. Farms are all small, from 5 or 6l. a year of which size there are many in the hands of labourers, up to 60l. which is a large one. Their cattle are all housed in the winter.

Three miles before Narbarth are some extensive woods. That town is prettily situated on the side of a hill with the ruins of an old castle.

The hedges, as well as the cabbins, cars, and barrels, put me in mind of Ireland. They form a bank 5 or 6 feet high and 2 or 3 broad, out of two ditches, and plant the hedge in a row along the top, setting old thorns, &c. to choose, as they form a fence immediately, which I never saw before, general, except near Waterford. In repairing, they clear the sides and mould up the roots, thinning the plants on the top, but either from the dryness of the banks or for want of cutting, many of them make a very stunted unhealthy appearance. There is some plashing, but it is very badly done.

October 24th to St. Clear. From Narbarth to Hubberston the course is,

1. Fallow lime and dung,
2. Wheat,

3. Barley

3. Barley,
4. Clover mow the 1st crop for hay, and plough in the 2d for barley, or else leave it a lay.

Rents 7s. 6d. to 10s. the whole farm through ; to 14s. on some farms. Farms rise to very large ones, but in general small. The Irish cottar system is found here—3 or 4 cottages to a farm of 40 or 50l. a year. They are always at the call of the farmers, they are allowed two or three grass fields at a moderate rent, a cow or two, but no pigs, unless one in a year, to kill at Christmas. Strangers get in winter 4d. a day, and food ; without food 8d. in harvest 1s. 1s. 6d. and food. They live on bread and cheese, and milk, or water ; no beer, nor meat, except on a Sunday. The culture of potatoes increases much, more planted last year than ever known before. The poor eat them ; and every cabin has a garden with some in it. They put them in the Irish lazy-bed way, on grass land, dunged ; but the best return is by setting them in drills with the plough.

Poor rates 6d. to 9d. in the pound, but reckoned by the plough land.

The use of clover increases greatly, and some mix trefoile with it. Lime the common manure. It is carried in panniers on horses 25 miles to the mountains of Carmarthenshire ; a barrel is from 4 to 5 Winchester bushels ; 5 barrels to a load ; and

3 to 10 loads to an acre last 3 crops. Price at the kiln 3s. a load. It is burnt with culm raised within half a mile of the quarry. They burn from april to september; never in winter. The effect of it is very great on all soils; it is seen to an inch.

They mow their barley and oats, but bind them into sheaves.

Many sheep are kept in the mountains of 8lb. a quarter; some $5\frac{1}{2}$. They clip from 1lb. to $1\frac{1}{2}$ lb. of wool; of which the stone is 18lb. and sells for 14s. mountain flocks are valued at 3s. 6d. a head round; if very good 5s. 6d. There is a right of commonage over all the mountains of Pembroke and Carmarthenshire. Leases generally for three lives.

The country towards St. Clear improves greatly, for passing some commons of heath, furz, and fern, at the fourth mile stone, there is a delicious scenery to the left, about Llandowra. There is a beautiful glen, formed by hills, that project in a variety of forms, spread over with oak woods that hang on each side and unite at the bottom. Attention is fully commanded till a sweet vale 3 or 4 miles across opens to view, all cultivation, or meadows of rich verdure: nothing level, but an incessant inequality of surface: a river winds through it that is seen in many places, and neat white houses slated, scattered about, compleat the chearfulness of the scene. The whole is hemmed in by mountains, that
give

the full effect of contrast. A mile further another view to enchant a traveller who is pleased with landscapes. A rich vale watered by a winding river leads between two woody hills; the distant scene innumerable inclosures; further still you come to another vale yet richer, the river opening in finer reaches; the declivities bold, and covered with wood, farms, cottages, stacks, a church and village animate the scene. To St. Clear which is in a charming country situated on a navigable creek.

Through all this country the fewel is culm, or small coal beat into a kind of mortar, with sea-ouze or clay, and then kneaded together by hand, into balls three or four inches in diameter, every time the fire is mended; the cleanly creatures of the fair sex after this lay the cloth, or make the bed.

Lime around St. Clear the great manure, it is laid on the fallows, has been used more than twenty years, yet the benefit is such, that the effect is seen to an inch.

1. Fallow,
2. Wheat, yields 25 to 30 bushels Winchester,
3. Barley, sow 5 and get 40,
4. Pease, sow $2\frac{1}{2}$ and get 25
5. Oats, sow 5 and get 40
6. Clover, 3 years,

Lime every where the great manure. There are sixteen or eighteen kilns in St. Clear. The culm is brought by water; one barrel will burn ten or twelve of lime. They pay 8d. a day for quarrying and burning. Running kilns will burn 40 to 50 barrels a day. The stone is very hard and fine, rises in great single rocks with much sand stone round it. There is no lime stone in Cardiganshire, but plenty in Carmarthenshire. They reckon that it does as well upon wet land as upon dry. They lay it frequently on grass without ploughing; it sweetens much; brings the white clover, and increases the quantity of hay. They carry it on horses, twenty-five and thirty miles into Cardiganshire, where it costs 10d. the Winchester bushel, but they reckon that no corn is to be had without it. Three fourths of Cardiganshire, mountain: one third, or one fourth of Carmarthenshire; in the latter, in ploughing the mountain sides, they throw every furrow *downwards* with a common, consequently they lose just half the day for want of turnwrest ploughs.

The farms here are small, from 5l. to 100l. four or five teams, at four to a team, half oxen, and half horses, to 100l. a year; breed the oxen on every farm; for all calves are reared; work them at three years old for one or two years, and then sell them: they are shoed, and move as well as horses. A horse costs as much as two oxen, yet has very few oats.

Rent

Rent of arable land 10s. of grafs 20 to 30s. Tythes 2s. to 2s. 6d. in the pound, and some so high as 4s. They reckon in the gross, that rates, tythes, church and highway taxes, come to 5s. in the pound.

Many iron furnaces, the ore dug in the country. The poor people spin a good deal of wool, and weave it into flannel for their own wear, no linen is worn by them, flannel supplying the place. Query, to the physicians of the country--Is the rheumatism known here as much as in other countries where linen is worn? They make cloth also for their own wear. Weavers earn 1s. a day, and sometimes more. The poor live on barley-bread, cheese, and butter; not one in ten have either cows or pigs, fare very poorly and rarely touch meat. Their little gardens they plant with cabbages, carrots, leeks, and potatoes. Rent of a cottage and garden, 10s. to 20s. Building a mud cabin costs 10l.

P R O V I S I O N S.

Beef, 3d. per lb.
 Pork, 2½d. to 3d.
 Mutton, 3¼d.
 Butter, 7d. 20 ounces.
 Potatoes, 1s. 4d. W. bush.
 Chickens, 3d. to 3½d.
 Turkies, 1s. 3d.

Geese, 1s. 6d.

Ducks, 5d. to 6d.

Wild ducks, 9d. to 10d. a couple.

Teal, 1s. a couple.

Widgeon, 6d. to 10d. a couple.

Salmon, 1½d. per lb.

BUILDING.

Oak, 1s. to 1s. 6d. a foot, which is 4d. dearer than twenty years ago.

Ash, 10d. to 1s.

Oak bark, 3l. to 3l. 10s. a ton, most of it goes to Ireland, where it sells for 7l. 10s.

A carpenter and mason half a day.

A thatcher, 10d.

October 25, to Carmarthen, the first appearance of which place is very fine, upon some gentle hills, with very bold ones backing it, cultivated on every side to their tops. One mountain in particular, seems to hang over the town in a picturesque manner. The other approach to it from London more striking still; for the road leads just above a fine river that winds fancifully through a vale of rich meadow, scattered with wood. To the left above the town, a bold hill with a few inclosures and a house deliciously situated in a group of trees. The surrounding hills exhibit a waving scene of cultivation. At a distance rugged mountains with a broken outline close in the whole. For three miles together, there is the richest profusion of scenery.

The

The country all the way to Llandilo is fine ; but the picturesque beauties of Newton Castle, the seat of Mr. Rice, are superlatively so. The great feature of the place is that of a very large hill, of the greatest variety of form, rising out of a most fertile vale, every where formed by higher hills, which approach in character to mountains, but are all cultivated. Through this vale winds the large river Towy, which breaks to the eye in beautiful reaches, scattered over almost every part, and apparently so distinct, that it is difficult to believe them the doublings of the same stream.

This vale is formed of a variety of grounds, with woods, groves, hedges, &c. in that sort of confusion which destroys the insipidity of a flat.

The hill which forms the park has scarcely a level acre in it ; no undulating water set in motion by the impulse of contrary wind and tide, could present more various or fantastick forms ; yet nothing rugged.

The hills and slopes melt into each other so happily, that the outlines are all beautiful. The woods of oak are noble ; in some places they sink into hollows, in others, spread over the declivities of the hills, presenting themselves to the eye in the richest masses of shade that contrast the livelier verdure of the undulating lawn. One projection of the grounds is singularly striking, it is a bold promontory that pushes perpendicularly

cularly into the hills; the whole an entire wood of oak: on the summit of its brow, an ivy-bound castle, in such preservation as to be interesting; the aspect is venerable, the situation commanding. From the brow of the hill the vale opens a vast scenery of wood, meadow, water, cultivated hill, and distant mountain; with a hill rising abruptly out of the vale, as if to hold up Driflan Castle for an object; it is a peculiar one. The river makes two great reaches, and a bend immediately under the castle hill, as if to pay its tribute to the genius of ancient Wales. It is a noble view; I counted thirty woods, some of them large.

There is a round tower in the castle almost perfect; an old stair-case leads up to a parapet walk which surrounds the battlements, and commands the whole country: Upon the whole I think this spot the most picturesque residence I have seen in England. Hill and dale, and wood and water necessarily unite to form many beautiful scenes: they are the notes which must every where give the harmony of a landscape, but they are here accompanied with their richest melody.

But these rural beauties did not make me overlook agriculture. Mr. Rice some years ago brought hither a Berkshire bailiff, by whose means he cultivated turnips and cabbages; I saw a field of each, which were good and well managed. He finds them of admirable use in feeding bullocks, and
fat

fat and lean sheep. But for milch cows prefers cabbages greatly, as with care in picking off the dead and rotten leaves, they communicate no ill taste to the butter; for other uses turnips better: he succeeds them with barley, and then clover and wheat, in the Norfolk husbandry; a perfect contrast to the fallows of this line from Carmarthen to Llandilo, which are all succeeded by wheat, and then spring corn in succession till the land is tired.

Land about Llandilo is good and lets well, much at 20s. mountain farms 5s. to 7s. 6d. average to Carmarthen 20s. the hay of the meadows sells at 30s. and those that buy are at all expences of cutting and making. Farms small, to 70l. or 80l. The course,

1. Fallow and lime.
2. Wheat, 12s. to 16s. bush.
3. Barley, 18s. ditto.
4. Barley, 16s. ditto.
5. Oats, 15s. ditto.
6. Clover generally for three years, and then fallow again.

Much of the vale is in tillage, for it is an excellent red, dry, sandy loam; the hills are much wetter, from clay and springs.

Throughout all this country the meadows are carefully watered by trenching and sluicing; the importance of which business, they understand perfectly

perfectly well : they spread lime also upon them to kill rushes.

Thirty horse-loads of lime, at 10d. each, the common dressing for their lands, each 3 bushels, at 10 gallons ; 4d. the load at the kiln, 4 miles off. They carry it 33 miles into Cardiganshire, on poney's backs, 3 bushels each.

Every farmer keeps cows, and rears many calves : one of 3ol. a year will have 15 cows, and rear 7 or 8 calves for oxen to plough with. On the mountains they have flocks of sheep to 400, small breed, worth 8s. each. Cardiganshire is a great sheep country ; they make their rents entirely by them ; all mountain ones. They there pen their sheep on lay land, then lime and plough it up : Wool 24lb. to the stone, at 18s. or 20s. a stone.

Among the poor there is a little spinning and weaving of flannel ; for few of them wear linen ; they all manage to buy some wool, spin and send it to the weavers, who earn 1s. or 1s. 3d. a day. Some spin hemp and flax for canvass sacking. Many in the mountains knit stockings, which are bought up at small fairs, and carried to Worcester, &c. They live upon barley or oaten bread and cheese. Most get meat once a week : very few keep cows, but some have pigs fed on acorns. No cottars here ; only in Pembrokehire.

Labour 9d. a day the year round ; 20 years ago was at 6d.

Carpenters

Carpenters and masons, 1s. 6d.

Thatcher, 1s.

Poor rates have risen from 9d. to 1s. 2d. in the pound.

Leases, 7, 21 years, and 3 lives.

P R O V I S I O N S.

Beef, mutton, and pork, $2\frac{1}{2}$ d. per pound.

Butter, 7d. 20 ounces.

Potatoes, 3d. for $2\frac{1}{2}$ gallons.

Cheese, $2\frac{1}{2}$ d. to 3d.

Chickens, 2d. to $2\frac{1}{2}$ d.

Turkies, 1s.

Geese, 8d.

Ducks, 5d.

Salmon, 1d. to $1\frac{1}{2}$ d. per pound.

B U I L D I N G.

Oak, 1s. a foot ; 20 years ago, 4d. to 6d.

Ash, 9d.

Their own spruce fir, 7d. very good ; almost as white as Norway deals.

Not one third of Carmarthen mountains ; in Brecknock not more. In Radnorshire more than half, and the same in Cardigan.

Before

Before I quit Llandilo, I should observe, that it is a proper post from which to take a tour to see the romantick parts of Wales; in this route, viz.

To Aberefrywith and Plynlymmon; Maluntyth, in Montgomeryshire; Fowymaronith, Dolgethly and Caeridderis, Trowfynyth, Penmawyr, Llamluyny, Carnarvon, Snowdon, Bangor, and so to Chester or Shrewsbury. Hughs, the landlord at the Red Lion, at Llandilo, has attended company this tour, which is through the most hilly and romantic country in Wales.

For 5 horses, 2 boys, himself, and a post-chaise, he charged 2l. 2s. a day. He maintained himself, his boys, and his horses; and travelled one day with another, 20 miles; a horse for himself he did not charge.

October 26, to Llandovry, 12 miles of very fine country; all hills and mountains, but cultivated to the very tops; with fine ranges of wood. The plashing of hedges much improved; many almost as well done as in Hertfordshire. At that place came first to waste Mountain; till then had seen very little from Milford Haven.

To Trecastle all mountain country; one hill six miles up; to the left, higher ones, whose tops are in the clouds. Most of these ten miles uncultivated; these hills let from 3s. 6d. to 5s. an acre, exclusive of the low vales. Many farms from 5l. to 20l. a year; some to 100l. which is
a large

a large one. They take here 5, 6, and 7 crops of corn in succession.

To Brecon, rents rise to 10l. and 12l. and even 15l. besides meadows which are every where high; near Brecon 21l. a farm there must be very bad indeed to be so low as 5l. round. Lime every where used, but not in such quantities as in Carmarthen and Pembroke: the price 1s. 9d. a tail, of 4 strikes, at 10 gallons. Delivered coals 4½d. to 5d. the bushel, of 10 gallons, at the pit Lu. Near the river Uske, a Mr. Williams has several fields of turnips, which shew what might be done. In above 80 miles I have not seen 20 acres, and none in the hands of common farmers. Passed church, by the road side, surrounded by the largest yews I have seen.

Mr. Longfellow, at the Bell at Brecon, is so good a farmer, that he is secretary to the Brecknockshire Agriculture Society, but which does not flourish so much as I wished to hear it did. They were established in 1752, and were certainly the introducers of turnips and clover, which (turnips at least) are not yet adopted by common farmers. Mr. Longfellow, in common, has had 30 or 40 acres, fed them on the land with sheep and cattle, and had as noble barley after as can be imagined. Beans are unknown in general, but he has usually 20 or 30 acres. In sheep also he has made some exertions; he bought 20 ewes of Mr. Bakewell,

to which he put a Brecknock tup, and sold the lambs at 2l. 12s. 6d. each: the breed answered exceedingly well. The acre here is $\frac{2}{3}$ of the statute measure.

October 27th, to Crickhovel; passed two more churches surrounded by vast yew-trees. The black hill Pengamvillrin, is all lime-stone, iron, and coal. The ore is come to first, under that the coal, and then the lime-stone; these hills thus rich in materials, hold thus for 20 miles due west, and belong chiefly to the Duke of Beaufort. The river Uike runs through a fine vale, between many hills and mountains. It is 60 miles to Swansea; all coal-ore, and lime-stone the whole way, with many collieries.

Through all this country land lets high, owing to the population of mines. A *cover* of arable which is $\frac{2}{3}$ of a statute acre, is 15s. Meadows from 30s. to 40s. but all watered that are possible to be done, and with the greatest skill and care. They build weirs to raise the rivers; cut master carriers, trenches, &c. and make mounds in every little hollow to catch every drop. Water at all seasons of the year, even when grass is $\frac{1}{4}$ grown if the weather is dry; a sure proof the husbandry is very well understood. The chief time is, however, from Christmas to May. Mr. Bridgwater, at Penyrworlood, near Hay, bought an estate that scarcely produced hay for his stables, but by water-

ing,

ing, has made it as fine a grazing tract as can be. He did 2 or 300 covers. His method was to mud the water before he floated. I wrote to him afterwards for the particulars of his method, but I suppose my letter was not directed right, for I had no answer. Lime and pond mud mixed, are also found here to improve meadows greatly. Lime is 3d. a barrel, of 3 bushels, at the kiln.

Turnips are coming in, but none hoed; they eat them off with cattle and sheep by Christmas, and sow wheat after them on one earth.

Orchards are scarce through this country, considering the vicinity of Herefordshire, but there are some good ones.

The mountain tracts are very extensive, it is, for instance, 20 miles to Hay, and 16 of it are mountains uncultivated. All are common; but the lords of manors give leave for the rent of a fowl or a peppercorn for lives to inclose bits, and these afterwards become their property. The only stock on the mountains are sheep, except a few colts, &c. every man keeps just as many as he pleases.

Mules are coming greatly into use, especially for bringing coals on their backs. A small one costs 8 or 10l. and carries as much as a large horse; asses are also used in great numbers.

The food of the poor people, bread and cheese and milk; or water; some small beer. Meat never, ex-

cept on Sundays. Price of labour, 10d. a day the year round; 20 years ago, 6d. In harvest 7s. a week.

To shew the general improvement of the country—20 years ago, there was scarcely any wheat in Brecon-market, now it is a great corn-market.

Rents through this country not so high as before, from 7s. 6d. to 15s. Meadows 25s. to 40s. It is a richer country from Brecon to that place, than it is from thence to Monmouth. For 5 or 6 miles around the town, the soil, is a fine red loam. Farms, from 20l. to 200l. and some rise even to 500l. owing to Worcestershire farmers, with large capitals, coming among them. The course,

1. Fallow,
2. Wheat,
3. Barley,
4. Barley,
5. Clover, 3 years.—Also,
 1. Turnips,
 2. Barley,
 3. Barley,
 4. Clover, 3 yrs.
 5. Fallow.

Orchards here begin to be common, but the produce is not considerable, two or three hogsheads per acre, the price 2l. 2s. to 5l. The finest is the golden pippin next the red-streak. A most barbarous custom they have, which is that of planting beans with a dibble, and yet not setting them in rows.

Meadows

Meadows are all watered with the utmost care and attention.

October 28th to Monmouth. For a few miles the country very hilly and pleasant, as before; but afterwards has a sombre air; much furze, and shabby wood; the soil wet and heavy; and red loam on rock; and the inclosures in some places so small, that nothing is to be seen: the cultivation not near so good as in Brecknockshire: even the meadows are not taken such care of. Pass 6 miles of villainous road to Monmouth, after passing the turning off for Chepstow. Rents 7s. 6d. to 12s. Meadows 20s. to 25s. and near Monmouth 30s. to 3l. The situation of that place does not strike me as it did Gray. Carmarthen I think may be preferred to it. Here and there a patch of turnips, but very trifling. They summer fallow for wheat, and then take several crops of spring corn, with some clover. Orchards are here scattered every where.

Leaving Monmouth, pass the Wye, which is here a large river, and this is the most beautiful side of the town. In a mile, come to a very beautiful scene, where the hills fall very boldly to the river; a reach of which is seen under wood on one side, and cultivated hill on the other; but notwithstanding there has been no rain for many days, yet is the river a stream of liquid mud. The soil is here a good red arable loam. They

plough strait; and the meadows all watered that can be. Another mile brought me to the Birmingham manufactory for edged tools; six years ago I was here, and they then informed me that 60 men were employed, now only 8 or 10 from deadness of trade. A little higher, the Red Brook works for melting iron ore, from the forest of Dean; and also from Lancashire, into pigs. They burn here sticks less than my wrist into charcoal.

What is remarkable in these works, is their melting over again the bloomery cinders, left many years ago in great heaps as refuse; and such is the superior skill of the present age over the preceding, that they get almost as much iron from them, as from fresh ore.

Enter the great forest of Dean, across which the road leads for 10 miles. It contains a great deal of timber, but few within sight of the road fit for the navy. The beech beautifully fine and strait. Much of it overrun with furze, fern, holly, and bushes. Every body around turn in whatever cattle they please. I remarked the soil particularly; and found little that is bad; much very fine; and such as would answer admirably for corn. Great tracts of very fine sound turnip loams. North to south it is 15 miles over; there are, probably, 90,000 acres in it; incroachments have been great and numerous. Much lime-stone all around.

around. Few countries are more truly rich than this vast waste; for it contains in the first place, a fertile soil, fine timber, lime, iron, and coals to burn and smelt them.

About Mitchels Dean, 16 miles from Monmouth, land rises from 10s. to 30s. but in general from 15s. to 20s. It is a great bean country: strong heavy land. In the course, 81 or 9000

1. Wheat.

2. Beans set by hand in 7 inch rows.

3. Barley.

It is remarkable that these crops form in the other extremity of the kingdom, (east Kent) the round tilth, but in an arrangement, which converts this bad husbandry into good; viz. Barley, 2 Beans, 3 Wheat. On other soils (their course is,

1. Fallow,

2. Wheat,

3. Barley,

4. Clover, two years, the first for hay; the second fed by sheep.

A waggon load of lime for 5 or 6 horses, 15 barrels, each $1\frac{1}{2}$ cwt. which is 7s. at the kiln. A cord of wood, 6s. to 6s. 6d.

Price of labour 5s. a week the year round. Colliers and miners, 10s. to 15s. a week.

The colliers in winter get young furz, chop it in a trough, and give it their horses with great success.

Coal is found within two feet of the surface ; but some pits are 300 feet deep.

October 29, to Gloucester, through an orchard country, where the golden pippin claims the pre-eminence for cyder. Passed a fine plantation of Scotch firs, exactly 14 feet square. I could count 40 years growth, they are 60 feet high, and from 9 to 18 inches diameter, 5 feet from the ground.

It was about Gloucester, that I first saw any thing like a farm-yard, with cattle foddered at straw.

Passed that city and its rich vale, of which I have before an account to Frog-Mill, near which place I met with one piece of execrable husbandry, that of breast ploughing a lay (the same operation as for burning) in order that the grafs might rot for sowing pease in the spring ; the men were paid 5s. an acre. When it is considered, that paring and burning secures a crop of turnips---and consequently barley ; and that pease are of all others the most uncertain crop ;---promising only when dibbled on a lay on one ploughing---it must be obvious, that this disturbing the turf, and letting loose the whole family of weeds, must make the pease a foul crop, and consequently, mar the course at its very opening.

Rent of the open fields, 6s. to 10s. I observed the farmers in these fields taking pieces in with dead hedges, instead of hurdles, by agreement, in order for a turnip course, after which, open field again.

October

October 30. To North - Leach and Burford. Passed the great inclosure at Sherborne, by Mr. Dutton, for several miles. It has been three or four years doing*. All by walls, $4\frac{1}{2}$ feet high; the work, 1s. 6d. for the lug of $5\frac{1}{2}$ yards. While open field, this tract of country, let from 4s. to 7s. an acre, now at 14s. or 15s. tythe free. It is a noble work, and will advance every private interest that is concerned, at the same time, that it promotes every public one†.

To Bowood, near Calne. For the following account of the husbandry about that place, I am indebted to the kind attention of the Earl of Shelburne (now Marquis of Lansdown) who took every means of having me well informed.

Farms rise from 200l. to 900l. a year, but generally are about 300l. or 400l. The soil is various: just about Bowood, there is much inch sand; also, tracts of stiff clay, others of stone brash loam; and the downs are a lightish loam on chalk. Rents from 18s. to 30s. an acre; average 20s. exclusive of downs, the arable part of which are from 3s. to 5s. but the sheep walk thrown into the bargain with

* Written in 1778.

† Having brought these minutes into a country I have already described more than once before, I shall make a break in the journal here, and unite it with the minutes of another, I took on a different occasion from Bowood, the seat of the Earl of Shelburne, near Calne in Wiltshire.

the rest of the farms. Descending from the downs, is the beginning of what is called North-Wiltshire, which is in general a rich wet loam on clay, or a clay, at from 20s. to 40s. an acre; very little under 20s.

Courses here are,

1. Summer fallow,
2. Wheat,
3. Barley,
4. Oats,

But the most general is,

1. Beans,
2. Barley,
3. Clover,
4. Wheat, which is truly admirable.

About the Downs some farmers have,

1. Turnips,
2. Wheat,

which for that situation is an excellent course.

They plough three, four, or five times for wheat, sow 2, $2\frac{1}{4}$, $2\frac{1}{2}$, bushels per acre, and get from 3 to 7 qrs. an acre, which last great produce I was assured, had sometimes been gained; the average 4 qrs. For barley they plough thrice, sow four bushels in April, and get on an average 5 qrs. For oats they plough but once, sow five bushels and gain 6 qrs. on a medium. For pease they stir twice or thrice; sow 3 or $3\frac{1}{2}$ bushels; but the best pea husbandry here, is that of the Bath gardeners, who
line

line much land for early pease drilled, kept clean, and got off time enough for turnips, which are eat on the land by Michaelmas, for wheat, and it is thus that their finest wheat is gained; 5 qrs. of pease are sometimes had, which are a very extraordinary crop.

But I should here observe, that the pease thus gained, are drilled by the hoe in rows, 9 to 12 feet asunder; one drill being sown, the men in making the next cover the seed in the first, and so on; beans are done in the same way; and what surprized me, I found much wheat put in, in this manner; upon ploughing flat for that grain, they strike the drills across the lands. The common price for putting in a crop in this manner is 4s. an acre. Whatever is thus sown, is hand-hoed twice at, 4s. a time.

For turnips they plough as often as necessary to kill the couch, making the land very fine for harrowing it out, raking it in heaps and burning. The quantity sown, is, however, very trifling. If they design the land for wheat, they sow in May, prepare by folding. Clover they generally mow once for hay and once for seed, get from 15 cwt. to 40 cwt. per acre; they have found that it will burst cows, if they are turned in while it is wet. Some tares they sow for feeding off with sheep.

Sainfoine is pretty much cultivated, near the Downs; they mow it for hay, get two tons an acre, feed the after-grass with sheep, &c. When it is worn

worn out, which will be from 12 to 15 years, they pare and burn it for turnips, and then take barley and clover, and reckon that it should be seven years in tillage, before laid again to sainfoine.

Carrots are very much cultivated upon the sand, about Bowood, by the Bath gardeners, there being no sand between that place and Bath. They pay 50s. an acre for it, from May-day to Michaelmas; dig it two spits deep, and sow it broadcast; they get from 3 to $3\frac{1}{2}$ bushels per pole square: the farmers sow some for horses, and give them washed instead of corn, and find it answers very well; after them they sow barley, which yields great crops. This culture of carrots should be extended by the farmers through all the sands and light loams of the country, instead of turnips, for oxen, sheep, hogs, and cows; 3 bushels per pole, are 480 per acre; which would prove more profitable than any thing upon their farms, if they would substitute trench ploughing instead of digging, which is a practice entirely unnecessary. The gardeners also hire these lands for potatoes; they dung for them hoe drills 18 inches asunder; dung the drills, and plant upon it 6 inches asunder; hoe clean twice, at 4s. an acre each time; crop 3 to 4 bushels per square pole; $3\frac{1}{2}$ are 560 per acre, wheat is sown after them.

Copse woods in this country are very profitable; when let they yield 20s. an acre rent; and if a
landlord

landlord keeps them in his own hands, he will find no difficulty in making them yield that or something more: they are cut at 12 or 14 years growth; and are sometimes sold standing, at from 15l. to 24l. an acre.

There is a great plenty of marle here, both of blue, white, and a reddish colour; it is not much used; the quantity they lay on is 120, three horse-loads each equal to about a square yard, generally on grass; they reckon it does much good: the digging and filling costs 1½d. a yard.

As to farm-yard dung, they raise very little, for their cattle are never confined in winter, they eat hay even on wet lands. Coal-ashes they get in the towns for 3s. a load, of 50 bushels; spread them on clover and meadow lands, upon which they are found very serviceable. No foot used. Rags are bought at Calne, at 3½lb. for ½d. they are found very beneficial, some assert them to be best on wet, others on dry lands.

Common town manure, 3d. a load.

Sheep are universally folded on the grass lands, as well as arable.

Hollow draining is well known, and is one of the greatest improvements they have made; they cut them from 18 inches to 3 or 4 feet deep, at the expence of 8d. to 18d. a pole, digging and filling; the effect is very great. The superfluous water is principally owing to springs. But I must remark,
that

that they are entirely ignorant of the way to lay their lands dry, by cutting no more drains than necessary. Many of them are cut down the hills *with* the slope, all which must be entirely useless: they seem to have no notion of going to the spring head, cutting through it, conducting away the water by one oblique drain, and seeing the effect before they proceed: in nineteen cases out of twenty, this lays all the land below quite dry; but they begin at the bottom, and keep draining up the whole side of the hill, which usually is labour lost.

They plash their hedges, which are in general good.

They sometimes lay down land to grafs; and at other times their way is to leave the wheat stubble of itself to become a meadow; which is true North American management. Grafs land lets at 25s. an acre. It is principally applied to dairying; two acres will summer-feed three cows of the best grafs, but in common it takes an acre and half to a cow; the breed here is both long and short horns, but chiefly the former from Warwickshire; but their home-bred milks best; of butter a cow will give 9lb. or 10lb. a week; but the common produce is cheese; the famous North Wiltshire sort. Dairies for this purpose rise to 200 cows, but in general are of 40, or 50. Sixty will make 3 cwt. of cheese every day. They begin to make in April; but no butter
except

except from the whey; this sells at 8d. per lb.

A very good cow will give as follows:

| | £. | s. | d. |
|---------------------------|-------|----|-------|
| 5 cwt. of cheese, at 30s. | 7 | 10 | 0 |
| Whey butter - - - - | 1 | 0 | 0 |
| Calf - - - - - | 0 | 5 | 0 |
| Hogs - - - - - | 0 | 10 | 0 |
| | <hr/> | | |
| | £. | 9 | 5 : 0 |
| | <hr/> | | |

But the average of a dairy, including losses, will not exceed 5l. The cheese sells at Reading fair at Michaelmas, from 22s. to 40s. per cwt. average 30s. to 35s. in some dairies; or about 4d. a lb. which for cheese that sells to the consumer at 8d. appears low. Surely better management should be exerted by the farmers to keep this great profit out of the pockets of factors and dealers.

A good cow gives from $4\frac{1}{2}$ to 5 gallons of milk a day; and they reckon that one sow may be kept to twenty cows, and the pigs kept and fattened as hogs. The winter food is hay alone, half a ton per cow.

There are some oxen fattened up to a large size, from 18l. to 25l. fat. Some are a year and half in fattening; in the winter have oats and hay.

Their swine fatten to 30 score on pease and barley; the pease they grind.

Flocks

Flocks of sheep rise to 2000; the profit is the lamb and wool; the wool 2s. and lamb 16s. 6d. this is in a general way of reckoning; but a part of the produce is an annual sale of ewes, keeping the same number of lambs in lieu of them: this is the universal system, no fattening flocks.

Some particulars of importance concerning this article, given me by Lord Shelburne's shepherd, were as follow.

Fourteen hundred sheep will eat an acre of turnips in a night.

One acre of turnips for sheep is equal to a ton of hay, or 40s.

The rot never known, except in wet lands more to the North.

The sheep on the Bowood sands yield an inferior wool to what comes from other soils, by reason of the reddish sand affecting the colour, and also adding to the weight.

A thousand sheep will fold $\frac{1}{2}$ an acre in a night, which is worth 10s. 6d. or 11. 1s. per acre.

The Wiltshire sheep are not reckoned so hardy as the Hampshire, yet are they constantly folded the year through.

Long-legged sheep in this part of Wiltshire reckoned better than short-legged; and will sell better: this so much the case, that if 20 are chosen out of 500, they will in general be the longest legs in the flock.

Wethers

Wethers will fatten in common to 26lb. a quarter; and rise generally to 30s. value; but good sheep bought in at two-year-old, and kept a year, will be worth from 40 to 45.

Relative to the breeding system the following, are the particulars of the Earl of Shelburne's flock, which are under the management of an excellent shepherd, and are reckoned a very fine flock.

Total number - - - - - 840

viz.

Ewes - - - - - 320

Year-old ewe } - - - - 140

Lambs

Two-toothed ewes }
too young or too } - - 60
small to breed.

Lambs - - - - - 320

Rams - - - - - 16

Wethers - - - - - 4

840

Their food,

200 acres of summer pasture, in which run also 8 horses and 12 cows.

200 Winter pasture,

60 After grafs,

52 Tons of hay,

4 Acres of turnips,

The

| The annual sale is, | | £. | s. | d. |
|-------------------------------------|-------|--------|----|----|
| 180 lambs, at 12s. | - - | 108 | 0 | 0 |
| 120 ewes, at 21s. | - - | 126 | 0 | 0 |
| 520 fleeces, at 2 $\frac{1}{4}$ lb. | - } | 47 | 13 | 0 |
| 1430 lb. at 8d. | - - } | | | |
| | | <hr/> | | |
| | | £. 281 | 13 | 0 |
| | | <hr/> | | |

The fold, if reckoned, would be 10s. 6d. a night per 1000, or 9s. for 840, which is 164l. 5s. Query, if this should be added, as it is all, or nearly all, applied to the land which supports the sheep.—On the downs the system varies from their getting more into turnips.

In tillage, &c. they use both horses and oxen; 4 horses are necessary to 100 acres; 6 oxen they find to do as much work as 4 horses. In a plough, they use 4 horses or 6 oxen, and this on their sand land; they do an acre a day, going 5 inches deep. The summer joint is 11. 1s. and the allowance of corn, &c. 6 bushels of oats to 4; and 2 cwt. of hay a week. The decline in a horse's value they reckon at 3l. per annum. They give their draft oxen corn when hard worked. Horses they like best.

They stir their stubbles in autumn.

Price of a cart, 4 horses, and 1 man, 8s. a day.

In stocking a farm of 300l. a year, 200 acres, 120 grafs and 80 arable, they calculate as follows,

6 Horses,

| | £. | s. | d. |
|---------------------------------|--------|----|----|
| 6 Horses, at 15l. - - - - | 90 | 0 | 0 |
| 25 Cows, at 10l. - - - - | 250 | 0 | 0 |
| 50 Sheep, - - - - - | 50 | 0 | 0 |
| Swine, - - - - - | 6 | 0 | 0 |
| Harnesfs, - - - - - | 10 | 0 | 0 |
| 2 Waggonfs, - - - - - | 42 | 0 | 0 |
| 2 Carts, - - - - - | 20 | 0 | 0 |
| 2 Ploughs, - - - - - | 1 | 10 | 0 |
| 3 Harrows, - - - - - | 1 | 1 | 0 |
| 1 Roller, - - - - - | 4 | 0 | 0 |
| Dairy utenfils, - - - - - | 5 | 0 | 0 |
| Sundry fmall implements, - - | 2 | 10 | 0 |
| Rent, - - - - - | 300 | 0 | 0 |
| Tythe, - - - - - | 25 | 0 | 0 |
| Rates, - - - - - | 75 | 0 | 0 |
| Wages, one man, - - - - | 7 | 7 | 0 |
| Ditto, a boy, - - - - - | 4 | 0 | 0 |
| A dairy-maid, - - - - - | 5 | 0 | 0 |
| 2 Labourers, - - - - - | 35 | 0 | 0 |
| Seed Wheat, 20 acres, - - - | 16 | 0 | 0 |
| Oats, 20, 5 bufhels at 2s. | 10 | 0 | 0 |
| Barley, 20, 4 ditto, at 2s. 6d. | 10 | 0 | 0 |
| Beans, 20, 3 ditto, at 3s. 6d. | 10 | 10 | 0 |
| Wear and tear a year, - - - | 5 | 0 | 0 |
| | £. 984 | 18 | 0 |

Land fells at 32 years purchafe*.

* Written in 1773.

Tythes both gathered and compounded; when the latter, wheat pays from 7s. to 10s. barley 3s. to 4s. oats 3s. clover and meadow 2s. 6d. turnips small tythes.

Poor rates run very high through all this manufacturing neighbourhood; 6s. in the pound is common; but every one, with whom I conversed, asserted, that this was owing to ill management in the officers, and great neglect in the justices; I think, however, there is another cause fully equal to the effect, which is the custom of the landlord paying the rates, they are dispensed by the tenant, and entirely under his management: How, therefore, can any œconomy come into the expenditure while others bear the burthen?

This is a system worthy of Bedlam alone.

The whole country is employed in the woollen manufacture, carried on at Calne, Chippenham, &c.

In every poor cottage tea is drank.

Leases are from 3 to 5 years; but on many estates there are none. A system which can only do where there are no expensive improvements to work, or where the landlord is at the whole expence of such.

L A B O U R.

In harvest 1s. 4d. a day, and 3 meals a week; 1 gallon of ale a day, and their small beer.

The same in hay.

In

In winter, 5s. to 6s. a week.
 Reaping wheat 4s. to 7s. an acre.
 Mowing corn 1s. 6d.
 ——— - clover and grafs 1s. 6d.
 Hoeing turnips 3s. 6d. to 4s.
 ——— - beans 4s.
 Dithing and rep hedge 8d. to 1s.
 Digging land one spit 2d. a pole.
 ——— - two ditto, 3d. a pole.
 No water furrows in their wheat lands.
 Threshing wheat 2d. per bushel.
 Other threshing by the day.
 Faggoting 2s. per 100, six feet long and 3 feet
 round.
 Farming man's wages 7l. to 8l.
 A lad 2l.
 Dairy-maid 5l. to 7l.
 Other ditto 4l. to 5l.
 Women in harvest 8d. a day and board;
 ——— - in hay the same.
 No rise of labour.

I M P L E M E N T S.

Broad-wheel waggon 45l.
 Narrow ditto 22l.
 A cart 8l.
 A plough 15s. to 2l.
 A roller 30s. to 5l.
 Shoeing a horse 20d.

P R O V I S I O N S.

Bread, at Calne, $6\frac{1}{2}$ lb. for 1s.

Cheefe, $3\frac{1}{2}$ d.

Butter, 8d. whey.

Beef, 4d.

Mutton, 4d.

Veal, 3d.

Pork, 4d.

Bacon, 8d.

Milk, $\frac{1}{2}$ a pint, skim.

Potatoes, 8d. a peck.

Candles, 8d. per lb.

Soap, 5d.

House rent, 3os.

No firing bought.

Tools, 10s.

B U I L D I N G.

Bricks, 22s. per 1000.

Oak, 1s. 6d. cheaper than formerly.

Ash, 36s. to 37s. a ton.

Elm, 3os.

Poplar, &c. 3os.

A carpenter, 1s. 6d. a day.

A mason, 1s. 2d.

A thatcher, 1s. 6d.

Dry

A G R I C U L T U R E. 69

Dry walls, 9s. a pole, 7 feet high, for the labour 1 foot of mortar, course in the middle.

Particulars of a farm,

150 acres.

50 arable.

100 grafs.

100l. rent.

16 wheat.

16 oats.

16 beans.

20 cows.

6 horfes.

10 young cattle.

2 labourers.

1 man.

1 maid.

Observations. The first object that presents itself, is the course of crops into which the farmers throw their lands. The most general system is, a continued series of corn without the intervention of a fallow, or any other fallow crop than beans; but if a summer fallow is given, which is seldom the case, then to follow it with three crops of wheat, barley, and oats. Too much cannot be said in condemnation of such a system: Beans are an excellent fallow, as managed in Kent: Even about Bowood, they profess to hand-hoe twice; but this is not general; besides, many crops are broad-cast

sown, and not hoed at all ; I saw drilled fields, and from the weeds should judge the management to have been exceedingly incomplete : In their course of, 1. Beans. 2. Barley. 3. Clover. 4. Wheat ; the cleanness and heart of the land all depends on the farmer straining every nerve to keep the beans like a garden, the earth loose, and perfectly free from weeds ; it is for this purpose, and upon these principles, that the Kentish farmers not only hand-hoe with great accuracy, but repeatedly horse-hoe their crops with various shims. In such complete management, no fallow can be better than beans—with an inferior conduct, none can be worse, except pease. This observation is yet more applicable to another of their courses, 1. Beans. 2. Wheat. 3. Barley. 4. Oats ; to which I attributed many fields I saw of very weedy corn. To speak of beans as a fallow under these circumstances is a difficult task ; to condemn them would be against the clearest principles ; generally to approve them would lead to great abuses : In Kent and part of Essex, nothing can justly be said in opposition to the practice, but in Wiltshire the case is different ; good husbandry in most particulars is in its infancy, and the farmers are not at all hurt at weedy crops and exhausted land : were not this the case, we should not see three or four sacks of wheat an acre, in fields, which, thrown into different courses, produce twice as many quarters.

But

But their systems should be viewed in another light: What are we to think of farms, the greater part of which is grass, and the arable thrown into courses that exclude turnips! In counties where husbandry is well understood, the value, and even necessity of turnips, rises in proportion to the quantity of grass; but these farmers conduct their business on principles so contrary, that large tracts of grass have not the accompaniment of a single acre of turnips, though there is arable land in the farms perfectly adapted to that root; and although sheep form in many the principal part of the live stock. The improvement to be recommended, is to make turnips the universal fallow on all lands that are light enough to produce and admit them to be fed off; these turnips to be well prepared for, and all the manure of the farm given to them. The turnips to be followed by barley, clover, and wheat, and nothing more. On strong lands, their own course of, 1. Beans. 2. Barley. 3. Clover. 4. Wheat, is unexceptionable, but with the proviso of the bean culture being excellent, and kept throughout the whole year in the most garden-like culture. This I recommend, supposing they will not come into cabbages, but where there is so much cattle, that vegetable should be the fallow on heavy land; planted on such ridges as will lay the land entirely dry.

At the same time that I am so free in pointing out their errors, I must acknowledge that there are some circumstances in which there are the traces of excellent husbandry among them; their drilling various crops, and sometimes bestowing hand-hoeing on them deserves much praise. I should not apprehend any set of men should experience the effect of this husbandry on a part of their farms, and not be induced to extend it considerably. Another article in which they have also much to commend, is their applying carrots to the food of their horses; this is no great practice yet, but its being known at all is no slight instance of merit. Their hollow draining, and plashing their hedges, are likewise points which deserve much praise.

Sainfoine near the Downs is well known, but by no means carried to the extent it ought to be; the soil is admirably adapted to that grass, yet, where there is one acre of it, there ought to be 500: this is an article of improvement which must come from landlords, for the farmers while they have the Downland for nothing, which is commonly the case, or for 2s. 6d. or 3s. an acre, will never work this improvement easy as it is in large: all downs should be under a course of sainfoine, with no more arable than is necessary for the change: Thus for instance, if the duration of sainfoine is taken at 16 years, then 16 parts of the
down

down should be under that grass, and as many more parts as there are years necessary for tillage before the ground should be sowed with it again; suppose this period 5 years, which with good husbandry would certainly be sufficient: the portions would then be,

- 10 Sainfoine,
- 1 Sainfoine, pared and burnt, and under turnips,
- 1 Barley, or oats,
- 1 Clover,
- 1 Wheat,
- 1 Turnips,
- 1 Barley, or oats, and with this crop sainfoine sown again,

16

These are the proportions, whether they are taken as single acres, hundreds, fifties, or twenties: Suppose twenty-seven each, then there would be 270 sainfoine; and it will not be difficult to shew, that such proportions may easily be made in the support of cattle to unite for a profitable husbandry.

One of the great objects of the husbandry here, and the greatest in North Wiltshire, is the daires: Cows are there kept to the exclusion of other cattle, and of corn and all arable crops. Such a conduct

duct one would suppose would indicate a most superior profit in cows ; I shall not venture to contradict in any positive terms, what sensible men assure us is the fact ; but as they either cannot, or will not, offer the circumstances upon which they found this conduct, I must take the few facts that have been given me, and by throwing them together, extract as much truth as I am able.

Extraordinary good cows, we are told, without deductions for losses, pay to the amount of 9l. 5s. but they are clearly of opinion, that the average, with the medium of circumstances, do not pay more than 5l. some thought no more than 4l. 10s. : Upon a farm of 200 acres, belonging to — Coburn, Esq. at the rent of 300l. fifty cows were kept, and four horses, for carrying the cheese to Reading fair, this almost the only business as every acre is grass. Now it must be apparent to every enlightened person, that this must be a most unprofitable system : Suppose the cows, instead of 5l. paid one with another 6l. or 300l. a year ; this is no more than mere rent ; and all other expences, with the farmers profit, must come from the other casual articles of a few sheep, a few fat calves, some hay, or I know not what : I was told, that the farmer might make a profit of 50l. a year on the farm ; but the mere value of his own labour, with the interest of the price of his 50 cows, would come to much more than 50l. ; other instances coincided

ded very much with this, and from the whole I am persuaded, that not a groat of profit is made by these famous dairies. But when the particulars of the intelligence concerning cows is analyzed, it comes out the same; the summer feed of a cow is $1\frac{1}{2}$ acre, and for winter $1\frac{1}{2}$ ton, of hay which is an acre more; thus $2\frac{1}{2}$ acres are necessary, which, at only 20s. rent, is 2l. 10s. to this we must add the dairy maids, implements of the dairy, interest of money, expences of the team for carrying cheese out, &c. &c. and when these deductions are made, it will not be found that the farmer has a profit in the least adequate to the hazard and trouble. But the right comparison is, with what the farmers of other countries would make upon the same land by practising a different husbandry; it would be tedious to calculate this minutely; but I may safely assert, that where one of these men make a shilling, others would make ten, particularly by ploughing a part of the land for the winter support of those cattle which the grass feeds in summer.

The Earl of Shelburne, though his attention has not been particularly applied to husbandry, yet having kept large tracts of land in his own hands and with very liberal views, his Lordship has planned a system of conduct which cannot fail of having excellent effects upon the husbandry of his extensive estate, and the neighbourhood in general. But first to shew that he does not even talk.

talk of farming without the requisite foundation of practice, I shall insert the particulars of his farm, premising that a park does not take up any part of it.

| | | |
|------|----------------|--------------|
| 470 | acres of | grafs, |
| 104 | ——— | arable, |
| 500 | ——— | plantations, |
| 1074 | ——— | in all, |
| 30 | ——— | oats, |
| 23 | ——— | wheat, |
| 20 | ——— | beans, |
| 6 | ——— | barley, |
| 8 | ——— | clover, |
| 15 | ——— | turnips, |
| 2 | ——— | carrots, |
| 51 | horses in all, | 17 for farm, |
| 15 | cows, | |
| 2 | bulls, | |
| 16 | fatting oxen, | |
| 6 | working ditto, | |
| 12 | heifers, | |
| 8 | young cattle, | |
| 840 | sheep, | |
| 23 | pigs. | |

His first great object, which ought indeed to be the first with every man of great estate, is planting, this may be seen from the quantity of his woods; great part of which have been planted by himself; and he continues planting 150,000 trees every

every year : this is a conduct which cannot be praised too much : it is truly noble ; and the more so, as every acre, thus consecrated to posterity, yielded a rent of above 20s. an acre. All sorts of trees have been planted ; but those which thrive the best are beech ; oak, ash, and elm, do well, but for the height of growth, in those he has planted himself ; the spruce fir comes near the beech, and some exceed it. His principle is to plant very thick, in order for the trees to draw up each other while young, and then to be thinned out as they grow ; which is certainly the best method.

In the culture of his arable land, his plan is to adopt the Norfolk course of, 1. Turnips. 2. Barley. 3. Clover. 4. Wheat.

Sainfoine for the Downs was an improvement which his Lordship had ordered a considerable experiment to be made of ; not to discover whether it would succeed then, a fact he well knew, but to ascertain how far it would be advantageous to the landlord, the farmer, and the public, to change those immense heaths, from sheep-walks to cultivated fields.

But all these improvements are not so deserving attention as the liberal and enlarged principles upon which he attends to husbandry. It is his idea, that a man of large fortune keeping land in his hands with a view only of uniting the profits of the landlord and the farmer, is acting from very poor motives :

tives: That he ought to apply to farming either as a mere amusement, or which is better, as a means in which he can be of very great service to the country.

That in the first place he should have his grounds to exhibit to his tenants and others, cultivated in the most masterly manner which the climate and soil will admit of; that they may at all times see the culture of all those new plants which are recommended to farmers from the fields of gentlemen; that seeing the produce, the application, and the effect, they may, by degrees, be induced to make experiments themselves, and choose between objects, once equally unknown to them. That they may see the plants, to which they have always been accustomed, carried to the highest degree of perfection, by new successions of arrangement, new modes of culture and new exertions in manuring. From fields thus managed a farmer must always return wiser than he came.

In another line, who, says his Lordship, should introduce improvements in the breed of cattle and sheep; in the implements of husbandry; and in various other circumstances? the farmer, who, probably, sees little beyond what he has used and to whom a failure in success would be a heavy loss, or the landlord, who must necessarily have opportunities of seeing such variation and their effects,

fects, and to whom losses are an insignificant object?

To all who are fond of garden scenes, in the great stile of Brown's finest works, Bowood will afford considerable amusement. The water scenes form the finest features of the place. For one idea, the imitation of a vast river, Blenheim is superior, but as a lake, this has, I think the advantage: The expanse of water is more varied: The accompaniment of hanging woods, varied groves, and cultivated slopes, far richer and more animated. Some scenes are truly Elysian and present, such an assemblage of the richest features of picturesque ground, that I know no place where they may be studied to more advantage.

Leave Bowood;—about Overton, between the Devizes and Marlborough, land lets from 10s. to 15s. an acre. Farms are generally large. The usual course is,

1. Turnips,
2. Wheat,
3. Barley,
4. Clover, hop-trefoile, rye-grass, &c.
5. Wheat upon three ploughings.

Turnips are all fed on the land by the flocks. They have two systems for turnips, one sown in May, which they eat off in time for wheat; these they hoe once. The other sown upon one ploughing, 4lb. to an acre, on the wheat stubbles for the spring feed

feed of their ewes : They do the same about Taunton in Somersetshire, and a very good way it is ; the turnips yield more food than the weeds in stubble, and the land gets an autumnal ploughing. Wheat yields, from $2\frac{1}{2}$ to $3\frac{1}{2}$ qrs. Barley, 4 to $5\frac{1}{2}$. Oats, 5 to 6. This, however, is not an universal system, for they do not sow more turnips than they can fold ; in their turnip fallow, they destroy the couch by harrowing, then raking it in heaps and burning it : The farm-yard dung, called here pot-dung, is all laid on for wheat ; a great blunder, it ought all to go for turnips. They know very well the value of sainfoine, sowing many fields with it. It lasts 15 years, and yields two ton of hay per acre, worth 45s. a ton. Soot is the favourite manure for it ; lay 10 bushels an acre. For clover, they use peat, at 7d. a bushel, collected from houses. They also lay coal ashes, 20 bushels an acre, at 4d. but think they breed couch. This is a circumstance, which deserves attention : any manure being apt to bring weeds, is only a proof of its excellence, though usually condemned by the farmers, for that quality. Their soils are very dry ; now I have on many occasions remarked, that for wet land these ashes are useless, but yield a great effect on good dry loams.

The flocks in this country are large ; and all ewes for breeding, the profit being the lamb and wool ; they fold the year through ; but at lambing in the farm-yard.

In

In stocking farms, they reckon 2000l. necessary for one of 500l. a year.

Price of labour, 1s. a day till harvest, then 10s. a week, for six weeks.

Six or seven miles the other side of Marlborough the country is divided chiefly into large farms, from 500 to 2000 acres, the soil a dry stoney loam on chalk, lets from 10s. to 15s. an acre. Their course,

1. Turnips, or summer fallow,
2. Wheat, four quarters an acre,
3. Barley, four quarters,
4. Oats,
5. Clover and ray-grass, two years.

Many open fields about Newbury.

Pass that place : They have through all this country watered meadows, concerning which I made enquiries. They mow them but once, owing to spring feeding, but they get from two to three tons an acre, which sells, at 25s. a load, out of the field, and from 40s. to 50s. in the winter : They insisted on its being exceeding good hay.

The low grounds are full of peat ; the ashes are so valued, that many waggons come from the distance of 15 or 20 miles for them ; the price 4d. a bushel ; and 10s. a load of peat for burning : I cannot help condemning all the waggons I saw, which are of the same construction, through both Berkshire and Wiltshire, not more than 10 inches

deep, so that 40 bushels are the common load, for four good horses; this is a monstrous defect. The Suffolk waggons, 2 feet deep, 4 wide, and 12 long, the draft of which is also four horses, hold 100 bushels of ashes, nor are the horses overloaded: But all the farming tribe are apt to think the teams can do no more than the custom of the country allots: such is the using six horses in a plough. The loss of the carriage of 60 bushels of ashes in every journey is prodigious. The farmers lay these ashes on grass, sainfoin, clover; and sometimes on pease; 10 bushels are the quantity per acre; and they are found to do best on light dry soils; on stiff land, a larger quantity is laid; the benefit is greatest in a wet season. They find much wood in the peat; I saw the men cutting it, and the peat spade went with ease through much of it; the colour a light reddish brown. Through all the tract from Newbury to Reading, no plough moves with less than four horses; though the soil is not heavy; and I observed some with that strength, stirring not more than three inches deep.

At Henley, I was very glad to find that Mrs. Clarke had kept the lucerne, which the late Mr. Clarke sowed; and very much to the credit of this female cultivator, I found it without a weed and in admirable tilth. I may again remark, that this lucerne, which is cut five times in the season, grows in one of the finest soils I ever saw.

To Wycomb—about Fawley, land lets, at 20s. an acre. Turnips, sell not uncommonly, at 50s. an acre to feed off. Barley, yields 5 or 6 quarters. Clover, two tons of hay the first mowing, and $1\frac{1}{2}$ the second. Wheat, 3 to 4 quarters. Cows are all suckled in, which they reckon 4s. a week, a good product of a calf. About Marlow, many beech woods. From Wycomb to Ammerham, the country is hilly, the soil a stoney loam on chalk, perfectly dry, and very fine land for sainfoin; yet, but few fields of it.

About Ammerham and to Rickmansworth, the soil consists of the same dry stoney loams. The course,

1. Turnips,
2. Barley,
3. Clover,
4. Wheat,
5. Pease or oats.

Half way between Wycomb and Ammerham, the beech woods end.

About Watford the land is very fine, lets at 20s. an acre; and the crops all good.

I viewed * Lord Clarendon's farm in this neighbourhood; whose hog husbandry I had heard much of. His lordship keeps not only a very large farm in his hands, but also a considerable water-mill; the bran and pollard arising from which, first suggested the propriety of going largely into hogs.

* In 1777.

His stock amounts to 144 in all. He has the Berkshire, &c. and the Chinese distinctions; of the former, 40 small, 6 larger, 2 boars, 12 sows. Of the Chinese, 12 sows, 2 boars, 60 pigs. The Berkshire he weans at 9 weeks; gives them barley-meal and water for a fortnight, and then turns them out to graze. The Chinese wean themselves at 2 or 3 months old. In winter wean none, but sell them from sucking. Begins to wean in March, and have none later than July. What is remarkable, the sows take the boar (especially the Chinese) at three weeks after pigging, yet pigs suck two months after that.

The litters of the large breed are 7 on an average, and 5 brought up after all hazards. Of the Chinese, the litter is 8 on an average.

The sows and pigs, and the weaned pigs, are fed on barley-meal and pollard, and the sweepings of the mill. They are kept till a year and half before fattening; then fed on barley-meal wetted, then pease dry; but their food changed to make them eat more: 16 or 17 weeks fattening.

In summer the sows, stores, &c. have nothing but ray grass and white clover grazing.

The winter food of stores, sows without pigs, &c. turnips or carrots, or potatoes, and some off corn.

Seventy fat hogs made in 4 months, 106 large loads of fine dung.

His

His lordship's poultry system is remarkable. He found that by keeping them constantly to a yard and its vicinity, the ground became tainted; they declined, and rarely did well. This induced him to change them about the park that they might have fresh ground, and the success shewed that the plan was good.

Sheep Lord Clarendon always folds in the farm yard, and straw to make dung; and finds every reason to be satisfied with the practice.

About St. Stephen's, half-way from St. Alban's to Watford, the soil is various; generally loams, and dry enough for turnips. Farms, usually, from 100l. to 200l. a year. Rent, 10s. an acre.

Courses are,

- | | |
|--------------------|-------------------|
| 1. Turnips, | 1. Turnips, |
| 2. Barley, | 2. Barley, |
| 3. Clover, 1 year, | 3. Clover, |
| 4. Wheat, | 4. Wheat, |
| | 5. Pease or oats. |

They generally dung for turnips, and feed them all off with fattening wethers; when sold, the price varies from 40s. to 4l. an acre. Barley yields from 4 to 8 quarters an acre: a farmer here has this year a 40-acred field 8 quarters through. Last year it yielded a very fine crop of turnips, being dunged, and fed on the land by sheep; after which 2 waggon loads of coal ashes per acre, were harrowed in with the barley seed.

Clover

Clover they mow twice for hay, getting from $1\frac{1}{2}$ to 2 load an acre, and second crop as much. Of wheat they get on an average 25 bushels. Of pease 20. Very few cows are kept here. Their sheep system is to buy wethers half fat at Michaelmas, and sell them fat from turnips.

At St. Alban's got into a country I have described on another occasion; returned home to North Mims, near Hatfield.

RENTS.

| | £. | s. | d. |
|--|----|----|----|
| All <i>Pembrokeshire</i> , one-third mountain, suppose at 1s. including vales, and two-thirds at 15s. the average may be called 20 miles, at | 0 | 10 | 0 |

| | | | |
|--|---|---|---|
| All <i>Carmarthenshire</i> , not one-third mountain, call it therefore at 3s. two-thirds at 12s. average 30 miles at | 0 | 9 | 0 |
|--|---|---|---|

| | | | |
|--|---|---|---|
| All <i>Brecknockshire</i> , one-third mountain, at 1s. the rest at 12s. average 30 miles, at | 0 | 8 | 4 |
|--|---|---|---|

| | | | |
|--|---|----|---|
| The line across Monmouthshire, 20 miles, as no general minutes | 0 | 14 | 0 |
|--|---|----|---|

| | | | |
|---|---|---|---|
| To Gloucester 28 miles, by the forest of Dean | 0 | 5 | 0 |
|---|---|---|---|

| | | | |
|----------------------|---|----|---|
| To Burford, 28 miles | 0 | 10 | 0 |
|----------------------|---|----|---|

Devizes

AGRICULTURE. 87

| | | £. | s. | d. |
|------------------------------------|---|-------|----|----|
| Devizes to Reading, 56 miles; many | } | 0 | 14 | 0 |
| watered meadows - | | | | |
| To Ammerham, 28 miles - | | 0 | 10 | 0 |
| To Mims, 26 miles - -- | | 0 | 12 | 0 |
| | | <hr/> | | |
| 266 miles average | | 0 | 10 | 6 |
| | | <hr/> | | |

ITINERARY.

| | Miles. |
|----------------------|--------|
| Milford-Haven, | |
| Haverfordwest, - - - | 10 |
| Narbarth, - - - | 10 |
| St. Clear, - - - | 13 |
| Carmarthen, - - - | 9 |
| Llandilo, - - - | 15 |
| Llandoverly, - - - | 12 |
| Treastle, - - - | 10 |
| Brecon, - - - | 10 |
| Abergaverny, - - - | 20 |
| Ragland, - - - | 9 |
| Monmouth, - - - | 7 |
| Mitchels Dean, - - - | 16 |
| Gloucester, - - - | 12 |
| Frogmill, - - - | 12 |
| Burford, - - - | 16 |
| Bowood, - - - | |
| Devizes, - - - | 8 |
| Marlbrough, | |

| | Miles. |
|----------------------|--------|
| Marlborough, - - - | 14 |
| Newbury, - - - | 18 |
| Reading, - - - | 16 |
| Henley, - - - | 8 |
| Wycomb, - - - | 14 |
| Agmondisham, - - - | 6 |
| Rickmansworth, - - - | 8 |
| St. Albans, - - - | 10 |
| North Mims, - - - | 8 |

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* It should be recollected by such as may think these rents high, that the vicinity of great tracts of mountain land, add considerably to the rent of all low lands. The former support great flocks of cattle and sheep in summer, but do little for them in winter, which makes a vast demand for hay and straw; not a marketable one, but for hiring the land which produces them.

A N N A L S
O F
A G R I C U L T U R E.

ON PICTURESQUE FARMING.

By Thomas Ruggles, Esq.

S I R,

IF the plan of your Annals would have permitted of a motto to each paper your correspondents sent you, like to those in the Spectators, and similar periodical publications, these strictures on picturesque farming might with propriety have been introduced by—*Ergo fungar vice eotis*--which would have expressed the intent of the writer to wet or sharpen the appetites of the readers for improvements of the beauties of their farms; at the same time he would with great readiness have allowed the other part of the quotation to be applied to his abortive attempt in pointing the way.

The topic now to be considered, comprehends the various kinds of trees, which, with a view to

profit and beauty, may be applied as well to fill up those short lands in our fields, which in a former letter were mentioned might be thrown into plantations, as also for single trees in our pastures, meadows, and such situations where they will not be in the way of the plough; and in the very beginning of this subject, I must confess my partiality for the congenial tribes of pines and firs, sprinkled and interspersed with various kinds of deciduous trees; believing that in this instance my leading principle of preserving an union between the profitable and beautiful will coincide with such a recommendation; for during the lapse of years in which these clumps are growing into use and profit, the varied masses of green which a mixture of firs and deciduous trees produce, will have a beautiful effect in spring, summer, and autumn; and through the winter, the permanent foliage of the firs will somewhat cloath this too naked country, and prevent in some degree that disagreeable effect on the landscape which Shenstone so much dreaded from the return of winter; the firs will also draw up the stems of the forest trees interspersed with them, straight and handsome, and they take their nourishment more from the surface of the earth than many of the forest trees, particularly the oak, which according to the poet

Quantum vertice ad auras
Ætherias, tantum radice in Tartara tendit;

If,

If, therefore, we are able to look forward with the prophetic eye of taste to the time when the firs have amply repaid the planter's expence, we shall see the deciduous trees lofty towering in the air, and gratifying our descendants with their beauty and magnificence, or repaying our progeny most largely for these delightful exertions of the taste, spirit, and industry of their ancestors.

Of the great variety of firs and pines which our nurseries are stocked with, the Scotch pine stands first in my list, for hardiness, use, and value, and, I will venture to add, its beauty; with this pine, the larch, on account of its quick growth and beautiful green of its foliage, should be intermixed together with a few of the silver, the pinaster, and cluster, which I suspect are varieties, and not distinct species; next to these, the different varieties of the spruce fir, and last of all in this climate, especially in cold soils, the Weymouth, because its value as timber in this island is doubtful; and except in particular situations and soils it will not bear the severity of our winters and variableness of our springs, as Earl Nugent's plantations by the side of the Essex road, at Gosfield, too plainly testify.

Elm and ash should not be intermixed with plantations of evergreens, because their roots run near, and they draw their nourishment from the surface of the earth, as is the nature of all the varieties of pines and firs; let these, therefore, with the oak,

form clumps by themselves, and variety, with use, will be at once attended to: if they outrun the oak reduce them to the humble condition of *silva cedua*, rather than suffer the king of the forest to be destroyed by his aspiring subjects, and let them return to their proper office of supporting and increasing their monarch's exaltation, but do not permit them to usurp his pre-eminence; the edges of all these plantations may be skirted with holly or laurel, which will add much to the present beauty of the farm, and considerably assist the quick and straight growth of the timber.

Among the different families of the aquatics which are in general the most likely, by reason of their procerity, to return to the planter himself profit for his care and industry, I should conceive that the white poplar, the aspen, which is similar to it in habit, the Virginian, the Lombardy or Turin, and the Athenian poplars, which last resemble the Virginian in growth and foliage, but are as yet scarce, are the several species which can boast the greatest beauty in stem, bark, and foliage; the Carolina, with its reticulated bark and expansive red veined leaves, is, when in health, a beautiful object, but cannot be recommended, except in very sheltered situations, where backed on all sides but the south by loftier trees; as it is of all the exotic aquatic trees introduced in this island the most liable to be injured by the frosts of our climate. The black
poplar

poplar is a very profitable tree, but is deficient in beauty when arrived at a considerable age and size; and liable to be drawn by the high winds much out of the perpendicular.

These will all answer to the picturesque planter much better in his meadows and pastures by the side of brooks, pools of water, and wet ditches, as single trees, than in masses or clumps; except the Lombardy or Turin, which, as well as the common willow, produce when in clumps a picturesque effect; the result of their form and foliage.

The three species of planes, as they are properly inhabitants of moist situations, should not be omitted; the oriental, the occidental, and Spanish; the first and last of these not being easily propagated, except by inlaying, are scarce; and not so beautiful as the occidental, which is a magnificent tree, and when planted on the banks of a stream will form a most agreeable shelter by its umbrageous branches on the opposite shore, as some on the banks of the Mole, in the county of Surrey, planted by the first Lord Ligonier, are a charming protecting and refreshing shade for cattle on the other side of the stream by which they are planted.

The Babylonian or weeping willow needs no commendation; every eye of taste sees its beauty, and every year's experience its procerity, and the pendent habit of its branches renders it impossible to mistake its only proper situation.

The cedar of Libanon can be introduced on an œconomic principle but in few farms; although where it has room to spread its extensive lateral branches, and can be on all sides exposed to the eye, and at the same time protected from cattle, it becomes by the time that half the common period of life is expended, a wood of itself, and forms a magnificent object; experience also has uniformly proved to us that it flourishes and is healthy in the most barren sands.

The sycamore, lime, and horse chestnut, cannot be recommended with a view to profit; their beauty it is imagined will tend to preserve them among us; and the stock will probably be kept up at about the same number; the walnut will also on account of its fruit remain among us, but the universal demand for mahogany furniture, has very much reduced the price and demand for walnut timber; this cause cooperating with that of its slow growth, forbids its being recommended as a profitable tree, and it boasts very little picturesque beauty.

♦ Meadows and pastures may have the mespilus and its grafted varieties scattered sparingly about them, whose vernal and autumnal cloathing is most elegant; and among these, the two agerolæ and the service, will soon repay the planter with their dulco acid fruits.

As I cannot profess myself an advocate for trees of any kind in hedges, especially those which are fences

fences to arable lands, it would be inconsistent to recommend the apple in such a situation, although it should seem, from the practice in cider countries, that the farmer had found it profitable to introduce them in hedge rows ; and I am sure, to the eye, they are, both when in bloom and their boughs bending down with fruit, a captivating object ; they form in the advanced spring, when in blossom, a characteristic feature in that kind of landscape which the French call *riant*, and produce to the view such a cheerful effect as no other plant can boast : Normandy abounds with such landscapes : there they form magnificent and beautiful vistas by the sides of their highways, and surely in a soil congenial to them, they might, with great profit, occupy the place of our short lands in arable fields. Virgil probably had in contemplation the beauties of apple bloom when he exclaims

Nunc frondent silvæ, nunc formosissimus annus.

These and a much greater variety of trees has the almighty disposer of climes and seasons, and their effects on the principles of vegetation, permitted to flourish in this happy this fruitful island ; these, among innumerable others, are the blessings which he has with such profusion showered down on us : Trees of all the zones, except the torrid, offer themselves to the hands of industry and taste, a sure and increasing reward to the planter—Et dubitant homines ferere atque impendere curas ?

Let us, therefore, shew our gratitude by the use we make of them; the man who builds, sees signs of decay on his expensive works before the edifice is finished, but he who plants, sees annually increasing riches, growing beauties, perpetual supplies of summer shade, and winter fire; and when advancing beyond the grand climacteric of human life, his children, or children's children, wish for property to settle themselves advantageously in the world, the axe will soon repay him a hundred fold, the fruit of those employments, from which he has already reaped amusement, health, and longevity; or if no such claims press on him, and his situation with respect to the gifts of fortune sets him superior to such considerations, his trees, his groves, and woods, will remain a lasting and noble monument of his industry and taste; and to distant posterity ornament his possessions, and be a source for future exertions of taste and magnificence.

These, Sir, and similar sentiments obtrude themselves on my mind, when I reflect on what has been done and is now doing by the united exertion of wealth, taste, and industry, in the article of planting throughout the kingdom; when I look forward to futurity, and see in idea the time when our island shall be visited by philosophers and the princes of the people from beyond the Atlantick, to observe and ruminate on the sad remains of British grandeur: How will the future naturalist stand amazed at the
profuse

profuse variety of trees he will find scattered here ; from the east and from the west, from the north and from the south ! The Ægyptians, the Grecians, and the Romans, our archetypes of human ingenuity and industry, enriched their respective countries with very few plants which nature had not produced among them, and their country was situated in the midst of eternal sunshine and perpetual springs : In Great-Britain almost the ultima Thule of the antients, the future traveller will see thousands become in a manner denizens and natives, which once were aliens.—Encouraging thought for the planter ! Surely he may, with at least equal justice as the poet, exclaim——Non omnis moriar.

I am, Sir, &c.

J. R.

ON FEEDING HOGS WITH POTATOES.

*By Mr. J. Boys, of Betshanger near Sandwich,
Kent.*

Betshanger, June 6, 1737.

SIR,

IF you think the following account of an experiment on fattening hogs worth communicating, I send it you for that purpose,

And am, Sir,

Your humble Servant,

J. BOYS.

| 1786. | Debtor. | £. | s. | d. |
|-----------|---|----------------------------|----|-----------------|
| Oct. 29. | To 28 pigs, at 22s 6d each - - | 31 | 10 | 0 |
| Dec. 26. | To 96 sacks of potatoes, at 3s. - | 14 | 8 | 0 |
| Jan. 21. | To 10 qr. 4 bush. of beans, at 25s. per } qr. (allowing fulls) - - - | 12 | 10 | 0 |
| Feb. 26. | To 10 qr. 4 bush. of pease, at 30s. - | 15 | 0 | 0 |
| April 21. | To 1 qr. of pease - - - | 1 | 7 | 0 |
| | To 9 qr. 7 bush. of barley, at 24s. - | 11 | 5 | 8 $\frac{1}{2}$ |
| | To grinding 9 qr. of the barley, at 2s. 8d. - | 1 | 4 | 0 |
| | To 1 bush. of pease - - - | 0 | 3 | 6 |
| | | <hr/> | | |
| | | £ 87 : 8 : 2 $\frac{1}{2}$ | | |

Creditor.

| | | | |
|---------------------------------|------|----|-----------------|
| By amount of 28 pigs as under - | 76 | 18 | 5 $\frac{1}{2}$ |
| <hr/> | | | |
| Loss | £ 10 | 9 | 9 |
| <hr/> | | | |

The pigs were drove to Mongeham fair for sale the 29th of October, with orders to my man not to sell them for less than 25s. each; but as he was offered no more than 22s. 6d. he brought them home, and I put them on potatoes immediately; and when they had eat 96 sacks they appeared to have much fallen away; I then weighed them and found their weight to be 2323lb. or as 20 alive to 13 dead 1509lb. at 7s. 6d. per score (the full value of them at that time) making 28l. 5s. 10 $\frac{1}{2}$ d. or loss by the potatoes 17l. 12s. 1 $\frac{1}{2}$ d.

Weighed them again after the 10 qr. 4 bush. of beans were finished: weight 3587lb. or as before 2331lb. at 7s. 9d. per score (they being at this time fit for the butcher.) Value 44l. 19s. 4 $\frac{1}{2}$ d.
Loss

A G R I C U L T U R E. 99

Loss reduced to 13l. 8s. 7½d. or gain by beans only 4l. 3s 6d.

Weighed again after the 10 qr. 4 bush. of peas were finished: weight then 4690lb. or 3048lb. dead, at 7s. 9d. makes 59l. 1s. loss increased to 14l. 7s. or loss by the peas only 18s. 4½d.

Sold them to Mr. Woodruff, butcher, at Sandwich, for 7s. 9d. per score, and

| | S. lb | £ | s. | d. |
|---|---------------|---------|----------|-------|
| Killed 3 the 27th of Feb. 1787 | Weight 20 : 3 | — | 7 : 16 | : 1 |
| 3 the 3d of March | - - - | 20 : 5 | — 7 : 16 | : 9 |
| 3 the 10th | - - - | 20 : 10 | — 7 : 18 | : 10½ |
| 3 the 17th | - - - | 19 : 18 | — 7 : 14 | : 3 |
| 3 the 24th | - - - | 21 : 17 | — 8 : 9 | : 0 |
| 3 the 31st | - - - | 24 : 13 | — 9 : 11 | : 0 |
| 3 the 7th of April | - - - | 25 : 8 | — 9 : 16 | : 10 |
| 2 the 14th | - - - | 16 : 7 | — 6 : 6 | : 8 |
| 3 the 25th | - - - | 20 : 4 | — 7 : 16 | : 6½ |
| 2 killed at home | - - - | 9 : 8 | — 3 : 12 | : 5 |
| 28 | | £ | 76 : 18 | : 5½ |
| | | £. | s. | d. |
| Loss by potatoes | - - - | 17 : 12 | : 1½ | |
| Gain by beans | - - - | 4 : 3 | : 6 | |
| Loss by peas | - - - | 0 : 18 | : 4½ | |
| Gain by barley-meal and 9 bush. of peas | - - - | 3 : 17 | : 3 | |
| Loss on the whole | - - - | 10 : 9 | : 9 | |

by which it appears that the potatoes were 3l. 4s. 1d. worse than nothing, or did the pigs an injury to that amount: the gain by the beans I think would not have been so much but for the pigs, being very much reduced by the potatoes: they appeared

appeared to thrive much faster with the barley-meal than any thing. The potatoes were the excellent, and very fine ones, and the corn all very good.

The whole process was conducted with the greatest care and attention, in order to determine whether there is any profit in potatoes, which I much doubted from former observations; and also to determine whether the rearing hogs in any manner is profitable; and I am now more than ever inclined to believe that there is no profit in rearing hogs, unless pork is very dear and corn very cheap. Neither do I think the fattening cattle with potatoes is profitable, unless beef is 8 or 9 shillings per score and potatoes very cheap.

The above experiment tends to confirm the fact that potatoes alone will not fat hogs, but it does not by any means prove, that they may not be very profitably used for that purpose when corn is added to them, whether they be given raw or boiled. This publication contains many indubitable testimonies of the great value of this root, when properly applied, in feeding hogs, horses, cows, and bullocks.

A. Y.

THOUGHTS

THOUGHTS FOR THE CONSIDERATION OF THE LEGISLATURE ON WATERING OF MEADOWS.

By E. Harries, Esq. of Hanwood.

Dear SIR,

A PRINTED paper has lately been distributed in my neighbourhood, setting forth, "That whereas divers persons had turned the water of the Rea brook, &c. over their lands, notice was hereby given, that persons so offending, would in future be secured, and a reward given to informers, by the association entered into by the millers and manufacturers who had works on the said brook." How unlike is the conduct of these gentlemen, to that all-gracious Power, who distributeth his streams over the whole world, fertilising the earth, and refreshing its inhabitants. They would engross to themselves alone what was intended as a common blessing. I am willing, however, that they shall have the sole use of it six days out of seven. But I desire them candidly to consider, whether permission might not safely be given to proprietors of lands adjoining any stream, to divert the same over them, on saturday evening, at eight o'clock, turning it again into its course, on sunday evening, at the same hour, but
that

that it shall not be so diverted, so as to pass by any mill or other work. I believe that this reasonable allowance would be sufficient, in general, for the purposes of agriculture. The small quantity that the land would imbibe would not materially obstruct the business of the mills. Besides, do not such persons as carry on their works on the seventh day, transgress the laws of their country, as well as the command of their God, and are liable to be informed of and punished? This brings to my recollection, the case of a curate admonishing a wealthy miller, who was notorious for keeping his mill and servants constantly employed on the sabbath day, which provoked him to bring an action against his rector for non-residence, and he recovered from him the penalty of 100*l*. But to return to my subject. I do not want to impede the business of those gentlemen, who in many situations have expended large sums to carry on various works of great public utility. I know how much the manufacturies of this country contribute to the advancement of agriculture. I only ask for a small part of a common blessing, and am convinced that the business of the millers, would be little, if at all, obstructed by complying with my request. I have but a small quantity of land that would be benefited by summer watering: but I possess four corn mills in the county of Salop: yet I am under no apprehension that that property would

would be depreciated in value by it. I hope this business will be brought before the House of Commons, and if an opposition is made to it, that the land owners will appoint committees, in the different counties, to raise subscriptions to enable it to be fairly argued before the House.

TRANSPLANTING WHITE-THORN.

Your correspondent on the subject of fences, in No. 42, very properly recommends transplanting quicksets every second or third year. By continuing this practice till they have gained size and strength, they may be removed without the least danger of failure, and will make almost an immediate fence. It is well worth the attention of those who have property in open fields, to train them in this mode previous to inclosure. The expence of posts and rails, especially in open countries, where wood is scarce, is very considerable. About two years since, I visited Cambridgeshire, after a long absence, and found it in its former state. I was informed, that not more than two inclosures had taken place, and that the expence was found so considerable that they had not answered. If they would adopt the method I have recommended of raising quicksets, inclosing would be as profitable there, as it has been in other counties. The lands in that county, that are open, let generally
from

from five to ten shillings an acre, which is very low for good arable land. They would advance to double that sum, if they were conveniently allotted, and every man at liberty to cultivate them to the best advantage.

AN EXTRAORDINARY CROP OF OATS.

A correspondent informs me that I may rely upon the truth of the following account of a crop of oats reaped by the Rev. Mr. Carne, vicar of Abberford, in Yorkshire, last harvest. The land contained exactly 3 acres, 1 rood, 10 perches. Before it was under the plough it produced nothing but rushes being a wet swampy soil. Mr. Carne drained it and sowed it with oats, and reaped 314 bushels. He sold the oats for 36l. 13s. 6d. and the straw for 12l. 6s. 2d. amounting to 48l. 19s. 8d.

CULTURE OF FILBERTS.

In your journey to Dover, p. 563, you inform us, that Filberts are a regular article of culture, and are managed in great perfection. I have often mentioned, that an acre of land, near a populous town, planted with filberts, would produce more neat profit than in any mode it could be applied to. The demand would be certain, and they would sell from 4d. to 8d. a pound or hundred.

dred. They are not so liable to perish as many other fruits. It is necessary that they should be securely fenced. I should be glad to be informed what soil is adapted to them. Whether the succors should be taken away? and the best mode of farming and raising an orchard of them.

Your sincere Servant,

E. HARRIES.

Hanwood,

July 20, 1737.

ON THE INCREASE OF POPULATION.

By Thomas Le Blanc, Esq.

DEAR SIR,

AS an additional proof to those already published of the increasing state of population, I send you the following extract, which I have carefully made from the register of this parish. The difference betwixt the baptisms and burials in the last period of 21 years, is, I think, more striking than any I have yet seen in print.

I have added this year's measure of the same trees, the dimensions of which you published last year, vol. 6, p. 528, and to save your readers the trouble of turning back to a former volume, and as it will not take up much more room on that ac-

count, I have recapitulated the former measures. The slower progress of the aquatics, No. 13, 14, and 15, during this year than the preceding, I cannot account for.

I am,

Your's, truly,

T. LE BLANC.

Parish of CAVENHAM, Suffolk.

| | Baptisms. | Burials. |
|------|-----------|----------|
| 1701 | 11 | 4 |
| 1702 | 8 | 10 |
| 1703 | 5 | 2 |
| 1704 | 7 | 10 |
| 1705 | 3 | 1 |
| 1706 | 8 | 3 |
| 1707 | 5 | 5 |
| 1708 | 7 | 3 |
| 1709 | 4 | |
| 1710 | 11 | 3 |
| 1711 | 5 | 6 |
| 1712 | 6 | 6 |
| 1713 | 7 | 5 |
| 1714 | 4 | 3 |
| 1715 | 6 | 1 |
| 1716 | 2 | 2 |
| | <hr/> 99 | <hr/> 73 |

1717

AGRICULTURE. 107

| | Births. | Burials. |
|------|---------|----------|
| 1717 | 8 | 0 |
| 1718 | 6 | 6 |
| 1719 | 5 | 8 |
| 1720 | 6 | 8 |
| 1721 | 4 | 5 |
| 1722 | 2 | 5 |
| 1723 | 4 | 3 |
| 1724 | 2 | 2 |
| 1725 | 5 | 5 |
| 1726 | 5 | 4 |
| 1727 | 4 | 7 |
| 1728 | 5 | 3 |
| 1729 | 7 | 11 |
| 1730 | 2 | 4 |
| 1731 | 9 | 2 |
| 1732 | 3 | 1 |
| 1733 | 8 | 4 |
| 1734 | 9 | 5 |
| 1735 | 8 | 9 |
| 1736 | 5 | 3 |
| 1737 | 4 | 9 |
| 1738 | 6 | 3 |
| 1739 | 8 | 6 |
| 1740 | 3 | 7 |
| 1741 | 1 | 2 |
| 1742 | 6 | 2 |

135
12

124

1743

| | Births. | Burials. |
|------|---------|----------|
| 1743 | 2 | 5 |
| 1744 | 7 | 2 |
| 1745 | 7 | 2 |
| 1746 | 4 | 5 |
| 1747 | 4 | 0 |
| 1748 | 2 | 10 |
| 1749 | 3 | 2 |
| 1750 | 1 | 4 |
| 1751 | 5 | 3 |
| 1752 | 4 | 4 |
| 1753 | 4 | 1 |
| 1754 | 4 | 5 |
| 1755 | 11 | 3 |
| 1756 | 6 | 5 |
| 1757 | 7 | 2 |
| 1758 | 6 | 3 |
| 1759 | 2 | 2 |
| 1760 | 5 | 5 |
| 1761 | 3 | 2 |
| 1762 | 5 | 10 |
| 1763 | 8 | 5 |
| 1764 | 5 | 9 |
| 1765 | 3 | 2 |
| 1766 | 10 | 4 |
| 1767 | 4 | 3 |
| 1768 | 14 | 2 |

136

100

1771

| | Births. | Burials. |
|------|---------|----------|
| 1769 | 6 | 2 |
| 1770 | 13 | 2 |
| 1771 | 8 | 4 |
| 1772 | 3 | 0 |
| 1773 | 9 | 0 |
| 1774 | 5 | 0 |
| 1775 | 9 | 0 |
| 1776 | 7 | 0 |
| 1777 | 9 | 0 |
| 1778 | 9 | 2 |
| 1779 | 7 | 5 |
| 1780 | 7 | 3 |
| 1781 | 10 | 2 |
| 1782 | 7 | 4 |
| 1783 | 7 | 4 |
| 1783 | 9 | 7 |
| 1784 | 7 | 2 |
| 1785 | 11 | 3 |
| 1786 | 6 | 2 |
| 149 | | 142 |

Measure of TREES, at CAVENHAM.

| No. | July 1785. | | July 1786. | | July 1787. | |
|--------------|------------|-----|------------|-----|------------|--------|
| | f. | in. | f. | in. | f. | in. |
| 1 Oak | 0 | 10½ | 0 | 11½ | 1 | 0½ |
| 2 Larch | 1 | 0½ | 1 | 3 | 1 | 4 |
| 3 Scotch fir | 1 | 3½ | 1 | 5½ | 1 | 7¾ |
| | 1 | 3 | | | 4 | Spruce |

| | | July 1785. | | July 1786. | | July 1787. | |
|----|------------------|------------|----------------|------------|-----------------|------------|----------------|
| | | f. | in. | f. | in. | f. | in. |
| 4 | Spruce fir - | 0 | $5\frac{3}{4}$ | — 0 | $6\frac{1}{2}$ | — 0 | $7\frac{3}{4}$ |
| 5 | Spanish chefnut | 0 | $7\frac{1}{4}$ | — 0 | $7\frac{1}{2}$ | — 0 | 8 |
| 6 | Elm - - | 2 | $7\frac{1}{2}$ | — 2 | 9 | — 2 | 11 |
| 7 | Pinaster - - | 2 | $3\frac{1}{2}$ | — 2 | $4\frac{1}{2}$ | — 2 | $7\frac{1}{2}$ |
| 8 | Larch - - | 1 | $5\frac{1}{4}$ | — 1 | 6 | — 1 | 7 |
| 9 | Weymouth pine | 0 | 5 | — 0 | 6 | — 0 | $7\frac{3}{4}$ |
| 10 | Acacia - - | 1 | $2\frac{3}{4}$ | — 1 | $5\frac{3}{4}$ | — 1 | $6\frac{1}{2}$ |
| 11 | Beech - - | 0 | $6\frac{1}{4}$ | — 0 | $6\frac{1}{2}$ | — 0 | $7\frac{1}{4}$ |
| 12 | Plane occidental | 0 | $6\frac{1}{2}$ | — 0 | $7\frac{3}{4}$ | — 0 | $8\frac{3}{4}$ |
| 13 | Lombardy poplar | 1 | 8 | — 2 | 0 | — 2 | $3\frac{3}{4}$ |
| 14 | Black poplar - | 1 | $2\frac{1}{4}$ | — 1 | $4\frac{1}{2}$ | — 1 | $5\frac{3}{4}$ |
| 15 | Willow - - | 2 | $9\frac{1}{2}$ | — 3 | 2 | — 3 | 3 |
| 16 | Silver fir - | 0 | $7\frac{3}{4}$ | — 0 | $8\frac{3}{4}$ | — 0 | $9\frac{1}{4}$ |
| 17 | Lime - - | 1 | $8\frac{1}{2}$ | — 1 | $10\frac{3}{4}$ | — 2 | 0 |

STRICTURES UPON THE EDITOR'S
OBSERVATIONS ON MR. MOSELEY'S
TARES AND BUCK-WHEAT, AS A
SUBSTITUTE FOR FALLOWS.

[ANNALS, Vol. VI. P. 215.]

By Edward Holmes, Esq. Scorton, Yorkshire.

S I R,

I am fully inclined to allow Mr. Moseley very great merit in his ingenious and rational substitute for fallows, in his own, and similar soils; but
at

at the same time I must ingenuously confess, that I think you have ascribed to it more *general, practical* importance, than it is justly intitled to. Mr. M. calls tares and buck-wheat substitute for fells, and accordingly, sows wheat after them; and your observations upon his process, evidently suppose the same arrangement of crops. Now it is plain from Mr. M's general system of crops, that his land is what he calls *light*, that is, as I understand it, either sandy loam, or loamy gravel, soils in themselves improper for wheat. I need not inform you, that most naturally good wheat soils, and particularly those which abound with clay, could not possibly be managed in Mr. M's manner one summer in twenty. But granting that such soils may produce as good a crop of tares, as what are called light, or less tenacious soils; and, granting likewise, that the tares are got off the land, by midsummer for instance, and the land properly ploughed; the buck-wheat in those soils we are now speaking of, would not, in my humble opinion, answer Mr. M's purpose. For in the supposed case, a great part of the moisture, and with it the vegetative powers of the soil, would probably be exhaled, before the buck-wheat—suppose it succeeded on such soils—could defend it from the solar heat. In short, upon these, or any soils where wheat can be grown to real advantage, it is my humble theoretical opinion, that except we can

sow something after the tares almost as prolific as Jason's hydra-feed, it cannot, in general, answer the purpose, which you seem, without hesitation, to expect. For let us suppose that this system of substituted fallow is adopted in such soils, as will always admit of being ploughed and sown properly at midsummer; it is well known, that if the weather be such as farmers generally wish for at that season of the year, the intensity of the sun's heat must exhale a great part of the humidity and alimentary particles of the land; and this exhalation will be found greater, in proportion as it was more compleatly shaded by the tares. But as one great object of fallowing, or preparing land for wheat, is, in all systems of husbandry, the extirpation of weeds, Mr. M's routine of crops—as you represent it—claims the preference far above every other, in this very important article. You say, whatever weeds are in the soil vegetate with the young tares—winter tares you mean—and are either strangled by their luxuriance, or cut off with them before they can feed. Now this, Sir, begging your pardon, is mere assertion; for winter tares in general abound with weeds, and many of these, if the land be not hoed or hand-weeded in the spring will shed their seeds before Midsummer, *groundsel*, for instance in May, and none more pernicious in tares. For if the tares be good, they rise above it, and prevent its downy seeds from flying off; and, thus confined, they descend to the ground on which they grew in such quantities

quantities as to make it sometimes, literally, white. Yet I must allow, that if a quick growing, full, smothering crop of any green vegetable, could be procured either after winter or summer-tares—for the latter will answer the same purpose, or, in my opinion, better than the former—it would most completely and most advantageously supersede the necessity of fallows in some soils. But certainly buck-wheat cannot claim the preference for this purpose, for if its vegetation were as quick as that of any other vegetable, its branching, shrub-like form must exclude it from the number of those plants which can claim the honourable title of *stranglers*. What do you think of *white mustard* for this purpose? * I mention this substitute for buck-wheat merely from theory; it is well known for its quick growth, and if it were suffered to stand till it perfected its seeds—provided one could bruise them with a heavy stone roller—as they contain a considerable quantity of oil, this, I presume, would be advantageous to the future crop. As a quart of this seed would be sufficient for an acre, no objection could be made to the expence, provided it were found to answer in other respects. But as this plant, in its uncultivated state, flowers in August, it may reasonably be doubted whether it would perfect its seed—when sown at midsummer—time enough for a succeeding crop of wheat. A few

* Surely buck-wheat is a very quick grower, and the cultivators of it reckon that no plant leaves the land cleaner.

feeds which I will sow in my garden to day, will decide this point. But if in this desirable system of substituted fallow it be thought advisable to discard buck-wheat, why not add it turnips into its place? winter tares may be profitably continued by the end of May, the turnips sown after one ploughing, kept clean by repeated hoeings, if necessary, and eat off with sheep by the end of October, which, I presume will be generally found soon enough for sowing wheat upon loams; sandy or gravelly loams, and these soils, I think, are the only soils where this preparation for wheat can be practised to advantage. I am aware it may be objected, that consuming the tares so early as the beginning of June, will almost defeat the advantage of them; and I own the objection is important when a farmer wants them to come in aid of his summer pastures. Should this be an essential point to him, there is one species of turnip, the stone turnip, which may be sown the beginning of August, and will, I know from experience, afford him in a good season, a crop often superior to that of the common turnip sown the beginning of June. But may not the common turnip be consumed as early as I have mentioned, and yet afford an effectual aid to pasture land though in a different manner? horses, cattle of all descriptions and ages, and hogs may be fattened in their stalls with these during the month of May, or later; ewes and their lambs, yearlings, and those sheep come from turnips not sufficiently fat, may be foddered

in the field where the tares grow, within hurdles—to which racks might be easily affixed at no great expence; and thus the whole field would gain all the advantage of a partial first folding. At this advanced season, the pastures will in general be so forward in grass, as to afford all the cattle a plentiful herbage for the succeeding summer. I am so fully convinced, in my own mind, of the superiority of turnips to buck-wheat in this system, that I intend to embrace the first opportunity of realizing it in practice. I am, with the greatest respect, and best thanks for your truly meritorious and disinterested labours for the public good,

Sir, your very humble Servant,

Scorton,

E. HOLMES.

July 9, 1787.

P. S. I am very anxious to know the result of Mr. Mosely's second year's system of substituted fallowing; the success of Mr. Bernard's new species of wheat and winter barley; and of the East-Indian turnip, which Mr. Bogle has named the Hastings turnip*.

ON THE SMUT.

By the same.

S I R,

Notwithstanding the combined experience of industrious husbandmen, since the first rudi-

* It is hoped that those gentlemen will gratify Mr. Holmes and the public with further accounts. A. Y.

mental efforts in agriculture, the art still continues but in its infancy. To investigate the causes of this slow improvement in the most important of all arts, would lead me far beyond my intention in this present address; I may, perhaps, prosecute this subject upon some future occasion. Great improvements have undoubtedly been made in the machines and implements of husbandry, and in the introduction of new crops for the purposes of corn, grass, and hay. But excepting these, and the improvements in mechanics, where do we find any additional product in those crops of corn, &c. which were cultivated two thousand years ago? With respect to those diseases to which corn is occasionally subject, the improvements are yet less; there is not, as far as I know, one effectual remedy for any malady of grain, not even for that most fatal in the most valuable of all grain, the *smut* in wheat; nor probably ever will be. Upon the authority of ancient Roman writers on agriculture, I suppose we have adopted and invented many brines, pickles, steeps, and nostrums, some unmeaning, and others evidently pernicious, to prevent this disease. But surely it is the utmost absurdity of empiricism to pretend to cure a disease, before we know the real cause of it; and unfortunately, in this disease, all that has been advanced, with few exceptions, is doubt, conjecture, confusion, or contradiction. I have tried almost every kind of steep, &c. for seed wheat, which

has

has been recommended as effectual for preventing smut, and never found them of the least service. I have, therefore, for many years, sown my wheat seed without any preparation whatever, and I will venture to assert, that none of my neighbours have had crops clearer from smut, than mine have been. Sometimes indeed when my seed wheat has not been so good in itself as I could wish, or abounded with noxious weeds, I have immersed it in a strong brine, the same as recommended in your Annals by Mr. Baxter; not to prevent smut, *which I am positive it will not*—but that I may skim off the seeds of weeds and imperfect grains of corn. I wish much to see the events of your trials of different steepings, &c. for seed wheat—of your different times of sowing it, and Mr. Macro's additional observations on the smut. If you have any curiosity to know my opinion of the cause of smut, please to consult a small pamphlet, intitled, *Strictures on Agriculture, Societies, &c.* printed for T. Evans, London, 1780. Though I have no reason, experimentally, to alter my opinion of the cause of smut, since this publication, yet I take the liberty of requesting your correspondents in general, to favour your repository with any experiments which may either tend to establish or refute my hypotheses.

Your's, &c.

E. HOLMES.

Scorton, July 9, 1787.

E X P E-

EXPERIMENTS.

By William Belcher, Esq.

EXPERIMENT, No. 1.

SOWED part of a cabbage-bed, and a patch of barley-field, with salt, without visible effect, as I had formerly done on grass-land.

EXPERIMENT, No. 2.

COMPARED cabbages transplanted with others not moved; those unmoved were better than moved: indeed I question if transplantation of any plants whatever, unless, perhaps, of fruit-trees, improves them.

EXPERIMENT, No. 3.

IN order to try whether corn sown very thick will stand better than thinner, according to the opinion of some who give it as a reason for sowing thick on rich ground, though I was of Miller's opinion, that thin corn is least subject to lodge; end of May, 1786, sowed two rows of barley, and ditto of wheat, one of each very thick, and one of each moderate, on garden-ground. Middle of August, neither of the rows of barley which had been some
time

time in ear, lodged, though heavy showers fell.--- As to the wheat both rows were still in grass, having been at a stand a long time, so that it is clear that wheat will not succeed, sown in May, in England. Beginning of September, the thin barley stood the best, according to Miller's prediction: therefore it appears erroneous to sow rich ground thick that it may not lodge. The wheat does not run into ear at all this season, which is remarkable: and to pursue this incidental experience; in autumn sowed two correspondent rows with the view of comparing them the following year. It appears that however early wheat is sown, there is no danger of its running to ear before winter. Query, if on fallow it were to be sown very early, and eaten off, the keeping it would afford, might not furnish itself with manure by means of the excrement of the cattle. On dry ground, or in dry weather, any kind of stock might be put on it. I propose cutting off half of each of the rows of this biennial wheat, leaving the blade of the remainder for the next year, though it will probably die in the winter, yet, being a species of grass, it may, possibly, revive in the spring. There is also another circumstance that would attend very early sowing, that of annual weeds coming up at sowing, such as would not be destroyed by feeding or trampling would be too forward to abide till the next year. This seems to be the best side of very early sowing.

EXPERIMENT, No. 4.

IN order to try whether stirring clean ground, or exposing it to vernal frosts would have effect: I, early in the spring 1786, struck up some loamy turnip-ground that had been trodden by sheep and become hard, into balks, some of which were afterwards split, and some not; by which means the ground lay exposed in a seemingly excellent meliorating manner for some weeks in dry frosty weather, &c. and much chickweed, which, with some grass, overspread the remainder of the field, was punched up and destroyed. At the end of April the whole field was ploughed throughout across the balks, and sown with barley; and what rendered the experiment more complete, showers fell during the sowing, so that some was sown wet and some dry; yet balking up was of no service in either, the barley being equal on the once simply ploughed ground. But I gained experience of another kind in this field; for the part that was sown moist (dry weather succeeding, and sharp frosts, though it was in May, injuring, I think, the seed, by taking hold of the wet ground immediately after sowing, and dry weather withal succeeding, whereby the ground was bound) was so thin of plants, that had not the ground been clean and in heart, there would have been no crop at all; as it was, it was much inferior,
and

and later than the other. But I believe it was not the ploughing, but sowing wet, that injured the crop, and I will never for the future sow barley, or pease, wet, if I can avoid it, except on sand or chalk, for this was a dry loam.

ON FALLOWING.

By William Belcher Esq.

FARMERS, especially in large fields, have numberless incidental comparisons of different crops with one another and with fallow; and on taking a farm, they would as soon refuse to allow for dung as for fallow, according to the quantity of tilth bestowed; but then I am not like them afraid of losing any virtues *in nubibus*. Mr. Young owns that new dung is not so suitable: how then does he know that the stench of dung so precious in his opinion, must not pass off, or be qualified by a communion with the atmosphere, before there becomes a food proper for plants, especially as he represents train-oil to be a poison? Mr. Young is indeed pleased to shift the question from condemning the theory of fallowing to contending that ground may be kept in tillage with constant crops; nay, he tacitly admits that entire fallows were the

basis of Mr. Hall's success. His deduction, page 314, from the circumstance of dung laid on at Michaelmas before proving more beneficial than that laid on at the last ploughing for turnips, that it should not be moved in summer, is precarious. I imagine that its superior effect accrued principally from previous mixture and incorporation with the soil before the turnip-seed was sown, in which mode I apprehend new dung with all its strength, in it to be the best, an excellent husbandry whereby a clean, hearty, and good season is procured for wheat on fallow. Surely it is an easy matter to try whether dung does or not prejudicially evaporate by exposition to the sun; by means of spreading some loads in summer, and letting it lie on the surface, whilst others are carried out just before the ground is cropped. Were the received notion just, the top of a mixen, exposed all the summer, a common practice, would become a *caput mortuum*; at all events indeed a bad method, as the juices, if they do not evaporate, run away. But surely Mr. Young is aware that evaporation and sediment are different enough, and that though oil may be miscible with water, the water may be separated and exhaled by itself. But were it granted that the sun may exhaust; does not dung laid on wet grounds, especially in winter, suffer as much or more by its virtue being washed away? Indeed, as to its fermentation, I know not but that

it

it may be prejudicial on light grounds: generally it is its intrinsic quality that is to be regarded, since horse-dung, perhaps the least valuable of all, ferments the most, but is not, I imagine, so oily. As a proof of the fertility of oily substances, I have found woollen rags extremely serviceable both to hops and corn. As to some plants living entirely on air, it is a curious phenomenon worthy of investigation; whilst it may be observed that some, as potatoes, onions, and some seeds, as those of fycamore, will sprout in one's pocket, having a faculty of vegetation to a certain degree without any nourishment at all. As to plants growing in water, that doubtless contains earthy particles. The mention of potatoes puts me in mind of a circumstance respecting the exhausting effect not of the sun but of plants in general: that the principal will not admit them, turnips, or any other growth among their hops. The Editor's thought of deeper ploughing, with the view of recruiting the exhausted turnip tilth, marks the genius of the great farmer. But he was misinformed in a particular, p. 219, that "perpetual feeding adds very much to sweetness of bite," the reverse of which I have experienced to be the fact, in regard at least to sheep. As to the question of fallowing, or shading, though sometimes flying from his theory, he at others carries it even to slovenliness, particularly in his zealous approbation of Mr. Mosely's plan.

The *great desideratum* in agriculture is to maintain land in heart without induction of manure, and at the same time, indeed, to obtain constant crops, were it possible. Were there any plants in existence really ameliorating, it is evident, as I have observed, that by a repetition of them, ground might be, without manure, gradually rendered like a dung-hill, with a constant crop at the same time accruing. But this is not to be expected on any soil; nor is there, I believe, any kind of manure universally attainable on moderate terms, if at all, which, another *desideratum*, unless ploughing in green plants, which might be universal, would answer the purpose; as to lime, its inanity is such as hardly to deserve the name of manure. Practitioners find on most soils the necessity of intervening pasturage, or at least of artificial grasses and fallow, or of one or more of these means concurring. There are some soils which if never rested in pasturage would become totally waxen with bad weeds and produce nothing, in spite of the plough, but poppies, coltsfoot, running sow-thistle, and the like.

SOME PARTICULARS RELATIVE TO
THE LATE JOHN WHYN BAKER,
ESQUIRE.

By the Editor.

JOHAN WHYN BAKER was an Englishman who settled in Ireland about the year 1761.— He had been engaged in a great and arduous scheme of conveying salt brine from some pits near the Severne, to that river in pipes a considerable distance, in order to extend the market by selling upon cheaper terms. By an indefatigable attention he had bought strips of land so as to connect the river and the pits ; but when it was found by the people interested, that he would ruin all the old works, they cut his pipes, ruined, and drove him out of the country at a moment when he was sure of making at least 20,000*l.* a year by the project, as he assured me by letter.

Upon that failure I believe it was that he went to Ireland. In 1762 he published his *Hints for the better improvement of Husbandry* at Dublin, which introduced hints to the Dublin Society ; he laid a plan before them for the establishment of an experimental farm for public exhibition. They approved it, and voted him 100*l.* I believe for a beginning, and put him upon a salary of 200*l.* a year, for the purpose of making experiments to be reported to them. Upon this encouragement he hired the farm at

Langhlinstown in 1763, nine miles from Dublin, of 218 Irish acres (354 English). His first report was the experiments of 1764; and he continued making an annual report till the year 1773; each of them are 8vo pamphlets of about 100 pages, which were printed at the expense of the Society. He also in those ten years, at their request, printed several tracts, particularly *Practical Agriculture epitomized*, 8vo. *Considerations on the exportation of Corn*, 8vo. *Address to the Representatives of the People*, 8vo. *The Reclaiming and Cultivation of a Bog in the county of Kildare*, 8vo. He also, by order of the Society, published at their expense an abridgment of my *Six Weeks, and Six Months Tours*, 12mo. 1771, of which 3000 copies were, by order, printed. The Society, besides these employments, assisted him in establishing, in 1765, a manufactory of Implements of husbandry, voting him 300l. for that purpose; this scheme was carried into execution so ably, that in a few years Baker made and dispersed five thousand pounds worth. He had the misfortune, however, to have the whole destroyed by fire two years after its establishment, with his house, materials, &c. Of these tools he also published *a short description and list*, 8vo. 1769, 3d edit.*

Upon

* It is to be regretted, that the booksellers in England have not reprinted all these works, especially the reports. They make three octavo volumes, and are very valuable. I would very readily undertake the office of editor of them, and furnish the proper notes of
of

Upon the whole the system of this patronage of Baker did that society more honour than any other work they ever engaged in; and his reports for the ten years he served them will live and be in many respects admired long after nine tenths of their other labours and productions are buried in oblivion: I may safely assert this in spite of all the faults of those reports. That there are such cannot be concealed. Among these, one of the greatest was his setting out an advocate for and practicer of the Tullian husbandry, which was no more applicable to Ireland than to Terra del Fuego. This lost him several years. The next great error was, his not making the turnip and cabbage culture an essential object: Some of his best experiments are on those plants so early as 1764, yet he never introduced them in large on his farm, and certainly never had any just notion of the turnip culture, or he would not have let his farm been without them from 1764 to 1768*, but indeed they made no figure in the succeeding years. In 1770 he began to find out the great consequence of clover, but not on any connected system, and did not at all see how much it depended on turnips or cabbages, for he sowed it with little

of explanation, if I had the least assurance that it should not be a losing business. They are very scarce and difficult to be procured, and hardly known at all in England.

* *Report 1763. p. 57.*

discrimination. In the year 1772 he was lessening his farm, and began a course of minute experiments of perches, on courses of crops, not very well imagined; this was injudicious, for it was not the exhibition that could have any effect in Ireland. Such were the faults of the husbandry of this very ingenious man; as to his excellencies, they are too numerous to dwell on here: He is, of all the other experimenters whose works are extant in this line, by far the most minutely and carefully accurate.— He was at the same time a most spirited and animated husbandman possessed of all that enthusiasm and love for his business which can carry a man great lengths in it. He was bold and lively in his ideas, yet cautious and attentive in their execution.

The Society for the encouragement of arts, manufactures, and commerce in testimony of their approbation of his labours, though in another kingdom, voted him a gold medal, with an inscription expressive of their esteem. And he was without any opposition elected a Fellow of the Royal Society. As to his fate in Ireland it was melancholy, for though the Dublin society supported him upon their whole very tolerable liberality, yet was it done in such a way, that poor Baker lived eternally in debt. His stipend was from year to year increased, and his support annually carried by his friends to the utmost of their power and more difficulty; till at last he was in such a state of want and want of ascendancy enough to have
a com-

a committee inimical to his employment appointed to revise his works, and call for an account of sums long before accounted for. So early as the year 1766 it appears by his report * that there was an enemy attempting to undermine him in a very illiberal manner. In 1771 † he calls him Mr. P. and reprobates with great good sense his exclaiming against the dung-hill in favour of green vegetable manures. I have been told that this person was one Matthew Peters, who published something, I know not what, upon the subject. The indefatigable Baker fortunately for the reputation of their Society, stood his ground till he died; but not without such anxiety, that I was assured in Ireland that his heart was broken. He published a letter to the committee above-mentioned, in which is this passage, descriptive of his latter situation :

“ You will please to consider, gentlemen, that I have given to the society and the public, *ten years* of my life, that I have devoted a large farm to their service, during that time, upon speculative points, many of which have been unprofitable to me, that I have written and printed very many thousand books for the society, at a considerable expence, that I have dispersed over this kingdom five thousand pounds worth of perfect implements of husbandry, and although there is no man who makes machines for every branch of agriculture,

* *Experiments in agriculture* 1776, pref. p. 3.

† *Ib.* 1771. p. 55.

but myself, that yet by the machines I have dispersed very many are now made in different parts of the kingdom, such as were never made before, in consequence of my labours ; that I have maintained, cloathed, and instructed, at the special request of the society, several apprentices, and, indeed, other young men, at the request of private gentlemen, without fee or reward ; that, from the nature of my undertakings, I have been always open to the applications, not only of this, but the neighbouring nations, by visitors as well as correspondence, and that in consequence I have received and written at least 10,000 letters ; none, I hope, dishonourable to the Dublin society, in their choice of me in this national-work ; that I have certainly animated that spirit of improvement, which now prevails in this kingdom, and in many parts have much improved the mode of cultivation ; that I have in your service sustained a very great loss by fire, which added to that upon the factory, amounts to above 1000*l.* and above all, that I have by anxious and intense application in discharge of the trust reposed in me by the society, brought on myself many infirmities, besides, that of having much impaired my sight, which indeed, I once thought beyond the power of application to injure ; and I can truly say, that I have for many weeks together, written for the society *sixteen* hours a day, without fee, my reward being really and truly to gratify that ambition I have ever had to serve them ; that I have had many
long

long and tedious attendances upon national points before the society, in which they have been pleased to think me useful; and have gone many journeys, at theirs, and the request of individuals, at my own expence, always with a zealous spirit to promote the views of the society, without any other regard to myself, than to deserve that character which they have been pleased to give me; considerations, which dispassionately reflected upon, will certainly induce gentlemen to think, as the truth is, that I have earned the sum total in anxiety and sorrow, by unremitting diligence, with more than a porter's labour *."

I cannot let this extract pass, without observing, that this transaction which threw Baker into so pitiable a situation, till it was concluded in his favour, passed in a society that have 10,000*l.* a year from the public, in a parliamentary grant, and at a time while they were at a great expence for the most absurd and preposterous schemes of manufacturing †.

Mr. Baker died in very indifferent circumstances, in 1775, was buried in the church-yard of Celbridge, in the county of Kildare, where a monument of stone was set up to his memory, by Gorges Edmund Howard, Esq. with this inscription to do justice to the memory of that person dead, whom he had always most ably supported, living.

* Letter to a Committee of the Dublin Society, 1774, p. 21.

† See my *Tour in Ireland*, 1781.

TO THE

MEMORY

OF

JOHN WYNNE BAKER, ESQ.

Formerly of WORCESTER, and late of WYNNFIELD,
in the County of KILDARE,

F. R. S.

Honorary Member of the Dublin Society,

AND

Member of the Agriculture Society for the Hundred
of Salford, in the County Palatine of Lancaster ;

Who departed this Life, August the 5th, 1775,

In the 49th Year of his Age.

To express the loss in the death of this most ingenious man in private social life, as a husband, a parent, a neighbour, and a friend, and in a public consideration, as one of the first Improvers of Husbandry and its implements in this kingdom its history can produce, would require more space than the small surface of this little monument contains: but, alas! his superiority begot him enemies, whose severity, what though it broke his noble spirit and untimely sent him away from us in the very summer of his life, yet it could not injure his worth, which will for ever live.

Urit enim fulgore suo qui prægravat artes

Infra se positas; extinctus, amabitur idem.

Thus translated by GORGES EDMOND HOWARD,
Esq. by whom the above inscription, as a small
tribute to the memory of his friend, was formed:

What tho' his lustre, who in arts excells,
Enflame the rancour'd heart where Envy dwells,
When he's extinct, fair Virtue's power to prove,
His full-earn'd glory shall extort their love.

The

The following is a memorandum on the back of the copy of the inscription with which Mr. Howard favoured me :

“ Several of the members of the Society who are enemies to, as ignorant of the advantages of husbandry, the original and principal cause of their institution, and are advocates for ineffectual manufactures and gimcracks, because he would not cringe to them, and wishing to add his salary to the fund for their ridiculous fancies and whims, made a headstrong barbarous resolution, that he had improperly charged the Society with about forty shillings in his account of implements of husbandry, with which he ought not to have charged them, than which nothing was more unjust : but it broke his honest heart, as he told me and his family not an hour before he expired !”

MISCELLANEOUS OBSERVATIONS.

To the Editor.

S I R,

I Greatly approve of the proposal in the 31st No. of your Annals of Agriculture, for making artificial Ponds, not only in such dry pasture as your correspondent describes, but also in all pastures, and even in all inclosed fields, to prevent the

the necessity of driving cattle to water. In such fields the ponds might be so situated as to supply with water cattle in two or more fields.

You know that the streets in the Adelphi are built on arches, which arches are covered with a considerable thickness of clay, found in digging for the foundations of those buildings. Chancing one day to pass by while the workmen were ramming down the clay with heavy beetles, the clay being very firm, I asked why they did not mix it with water, which would render it more easily formed into a close substance? I was answered, that the water so added would escape, and thereby leave cavities in the bed of clay, through which water might penetrate and injure the arches.—In this view, perhaps the direction of adding water to the clay in making the foundation of the ponds may be injudicious.—Instead of laying gravel or stones on the upper coat of clay, I am persuaded that, in the long run, it would be cheaper, and better, to pave the bottom of the pond: and the paving-stones, being laid in strong mortar, would remain unmoved for years. The evaporation of water, especially in summer, is greatly accelerated when the body of water is so shallow that the rays of the sun penetrate to, and warm, the bottom of the pond, I, therefore, think, that the access to the water should be only at the ends of the pond, and that on the sides and edges it should be rendered perpendicular, to the very bottom of the water.

As

As in all bodies of stagnant water, animal and vegetable substances will collect and rot, from whence putrid exhalations must arise, plantations of willows, or other trees, should be made on the sides of ponds, for the reason mentioned in p. 44, and so accurately adduced by Drs. Ingenhoufz and Priestly. The willows will afford an early food for bees, in the spring.

That sheep are benefited by being enabled to have recourse to water when they please, is not to be doubted. And here let me mention a method practised by General Sir George Augustus Elliot, at his seat in Suffex.—A stone hollowed for containing water is built into the wall of his stable for horses opposite to every horse; thereby to give the horses an opportunity to drink at pleasure. Might not the same practice be of use in fattening bullocks for market?

An ACCOUNT of the MONIES remaining in the EXCHEQUER, on the 5th Day of April, 1787, of the SURPLUSSES, EXCESSES, or OVERPLUS MONIES, and other REVENUES, of the Fund, commonly called THE SINKING FUND, for the Disposition of Parliament, after satisfying the several Annuities and other Charges thereupon.

THE Monies remaining in the Exchequer, on the 5th day of April, 1787, of the Surplusses, Excesses, or Overplus Monies, and other Revenues, of the Fund commonly called The Sinking Fund, for the Disposition of Parliament, after satisfying the several annuities and other charges thereupon, amount to the sum of One Million Two hundred and Twenty-six thousand and Seventy-two Pounds Two Shillings and Eleven pence Half-penny.

Exchequer,
the 17th day of April, 1787.

An

An ACCOUNT of the Amount of the several DUTIES upon SPIRITS distilled from MALT, distinguishing the Quantity of such Spirits charged with Duty in the Years 1783, 1784, 1785, and 1786, as delivered into the HOUSE OF COMMONS.

| Quantity of Spirits in Gallons. | Amount of Duty on Low Wines and Spirits, exclusive of the per Cent. Duties. | | Amount of per Cent. Duties. | | Duty on Wash. | | Total. | |
|---------------------------------|---|---------------------|-----------------------------|---------------------|---------------|--------------------|-----------|--------------------|
| | £. | s. d. | £. | s. d. | £. | s. d. | £. | s. d. |
| 1,364,801 $\frac{1}{2}$ | 291,925 | 5 6 | 43,788 | 15 9 $\frac{1}{2}$ | — | — | 335,714 | 1 3 $\frac{1}{2}$ |
| 1,486,107 | 317,857 | 6 7 | 47,678 | 11 11 $\frac{1}{2}$ | — | — | 365,535 | 18 6 $\frac{1}{2}$ |
| 1,421 | 607 | 17 1 $\frac{1}{4}$ | 91 | 3 6 $\frac{1}{2}$ | — | — | 699 | — 7 $\frac{1}{4}$ |
| 53,603 | 7,189 | 3 9 | 1,078 | 7 6 | — | — | 8,267 | 11 3 |
| 3,014,784 | — | — | — | — | 314,040 | — 7 | 314,040 | — 7 |
| 4,106,316 | — | — | — | — | 427,741 | 9 3 $\frac{1}{2}$ | 427,741 | 9 3 $\frac{1}{2}$ |
| 10,007,037 $\frac{1}{2}$ | 617,579 | 12 11 $\frac{1}{4}$ | 92,636 | 18 9 $\frac{1}{4}$ | 741,781 | 9 10 $\frac{1}{2}$ | 1,451,938 | 1 7 $\frac{1}{2}$ |

1783 — — — Charged
 1784 { Charged with double Duty on Low
 Wines
 1785 { from July 5, to Nov. 1, 1784 & Spirits
 from Nov. 1, to July 5, 1785 } Charged
 1786 — — — } on Wash

N. B. The Distillery Duties were charged on Low Wines and Spirits to the 1st of November 1784, and from the said 1st of November 1784, the Mode of charging the Distillery Duties has been on the Wash.

Ex. Office, London,
8th Feb. 1787.

STATE of the TRADE between the BRITISH DOMINIONS and PORTUGAL; taken from the Accounts prepared by the British Factory, by Order of the HOUSE OF COMMONS.

| | £. | s. | d. |
|---|---------|----|----|
| TO amount of the woollens imported from England to Lisbon, taken from the factory's statement in 1785, and nearly agrees with the Portuguese account, after deducting the overcharges | 259,366 | 4 | 0 |
| To amount of the woollens from Ireland, taken in the same manner | 5,921 | 13 | 4 |
| To amount of all the other articles from Great-Britain to Lisbon | 146,449 | 2 | 9 |
| To amount of all the other articles from Ireland to Lisbon | 128,441 | 7 | 0 |
| To amount of fish from Newfoundland to Lisbon | 70,621 | 17 | 6 |
| To amount of timber from Nova Scotia to Lisbon | 150 | 0 | 0 |
| To amount of freights of the whole | 27,151 | 9 | 7 |

To

A G R I C U L T U R E. 139

To amount of woollens from £. s. d.
 England to Oporto, taken
 from the paper intituled,
 “ Rezums das fazendas de
 La,” 1785 - 717,349 210

Having in our examination of
 this paper found an over-
 charge of 12 *per cent.* on the
 woollens to Lisbon, we may
 presume the same has been
 done on those to Porto: we
 therefore deduct 12 *per cent.*
 being - 86,081 705

177,543 19 8

To amount of sundry other ar-
 ticles sent to Porto, being the
 amount in the paper intitu-
 led “ Le Commerce du Por-
 tugal, &c.” after deducting
 the above sum for the wool-
 lens, and we take, as there
 stated - - -

17,524 14 0

To amount of corn sent to
 Porto, calculated as near as
 possible from the Consul's
 statement of the trade with
 that place, and we suppose
 is not included in the above

39,375 0 0

To amount of fish from New-
 foundland, calculated in the
 same manner - - -

34,609 0 0

| | | |
|---|------------|------------------|
| To amount of all the imports from Ireland to Porto, esti- mated from the same state- ment - - - | } £. s. d. | 3,937 10 0 |
| To amount of all the imports from Great-Britain to Vi- anna - - - | } £. s. d. | 8,994 14 0 |
| To amount of all the imports from Great-Britain to Fi- gueira - - - | } £. s. d. | 9,406 0 0 |
| To amount of imports into Se- tuval, which we presume con- sist of a few cargoes of corn, in British ships, and butter, which the Portuguese, that carry salt to Ireland, bring in return - - - | } £. s. d. | 30,782 7 0 |
| To amount of imports from Great-Britain to Faro - | } £. s. d. | 4,330 0 0 |
| | | <hr/> |
| | | £. 964,604 18 10 |

We have to observe, that, on examining the state of the trade with Oporto, given by the Consul, we found that the prices of the goods imported are taken from the valuations of the Pauta on which the duties are paid; and of the exports from the valuations of the Consolado outwards; consequently it could be of no further use than to ascertain the quantity of each article, which we presume it does pretty accurately.

We

We should also observe, that, in a general balance, the value of the corn imported from Great-Britain and Ireland ought to be taken on an average of several years, and not reckoned on the full amount of the year 1785, which was a season of great scarcity in Portugal, and the quantity uncommonly large, the amount being £. 124,500 —. —. is reis 442,660 722; and it is well known that some years no corn at all has been imported from Great-Britain or Ireland.

| | | | | |
|--|---|--------|----|----|
| By amount of 2,250 pipes of wine sent from Lisbon to Great-Britain, from the factory's statement in 1785 | } | £. | s. | d. |
| | | 43,031 | 5 | 0 |

| | | | | |
|--|---|--|--|--|
| By amount of the other exports from Lisbon to Great-Britain, consisting of oil, fruit, salt, cotton, and tea | } | | | |
| 1,273,225 800 | | | | |
| Deduct the tea 503,225 800 | | | | |
| | | | | |

| | | | | |
|--|---|--|--|--|
| By amount of the wine exported from Oporto to Great-Britain, being by the Consul's statement 22,626 pipes, and they may be fairly valued at 60 000, or £. 16. 17. 6. per pipe, put on board ship | } | | | |
| | | | | |

| | | | | |
|--|---|---------|---------|-------|
| By amount of the other articles, which, by the same state- ment, we estimate at - | } | £. | s. | d. |
| | | 18,281 | 5 | 0 |
| By amount of exports from Porto to Ireland, being 449 pipes of wine, at 60 000, or £. 16. 17. 6. per pipe - | } | 7,576 | 17 | 6 |
| By amount of exports from Faro to Great-Britain - | } | 6,482 | 16 | 0 |
| By amount of exports from Fi- gueira to Great-Britain - | } | 1,663 | 15 | 0 |
| By amount of exports from Vi- anna to Great-Britain - | } | 802 | 16 | 6 |
| By amount of exports from Se- tuval to Great-Britain - | } | 16,027 | 10 | 0 |
| | | <hr/> | | |
| | | £. | 728,242 | 10 0 |
| By balance in favour of the British dominions - - | } | 236,362 | 8 | 10 |
| | | <hr/> | | |
| | | £. | 964,604 | 18 10 |
| | | <hr/> | | |

It is seen by the preceding account, that the whole amount of the teas sent to England is deducted from the general account of the exports; but we must observe, that as full half the amount remains to Portugal in the freight, duty, and charges, the cost in China ought only to be deducted, which is £. 70,766. 2. 8. is reis 251,612 900.

The

The expences of english shipping, while in the ports of Portugal, are also very considerable, and not included in the foreign account.

We beg leave further to remark, that by the annexed statement it appears that the value of the importation of woollens, and the exportation of wines, is so nearly equal, if the island of Madeira was to be taken into the account, the balance would undoubtedly be in favour of Portugal; and that these two articles are the objects which constitute the present treaty between the two nations.

An ACCOUNT of the SUMS paid into the EX-CHEQUER, on Account of the LAND and MALT TAXES, between the 5th of January 1786 and the 5th of January 1787, as delivered into the HOUSE OF COMMONS.

LAND TAXES.

| | | | £. | s. | d. |
|------|---|------------------------------|-------|-----------|-------------------|
| 15th | — | 3s. Aid, A ^o 1767 | — | 1,065 | 5 3 |
| 22d | — | — | 1775 | — | — |
| 40th | — | 4s. — | 1776 | — | — |
| 42d | — | — | 1778 | — | — |
| 43d | — | — | 1779 | — | — |
| 44th | — | — | 1780 | — | — |
| 45th | — | — | 1781 | — | — |
| 46th | — | — | 1782 | — | — |
| 47th | — | — | 1783 | — | — |
| 48th | — | — | 1784 | — | — |
| 49th | — | — | 1785 | — | — |
| 50th | — | — | 1786 | — | — |
| | | | <hr/> | | |
| | | | £. | 2,038,272 | 9 5 $\frac{3}{4}$ |
| | | | <hr/> | | |

MALT DUTIES.

| | | | £. | s. | d. |
|-------|---------------------|---|-------|---------|----|
| Malt, | A ^o 1784 | — | — | 12,752 | — |
| Ditto | — 1785 | — | — | 501,916 | — |
| | | | <hr/> | | |
| | | | £. | 514,668 | — |

Exchequer,
the 17th day of April,
1787.

An

An ACCOUNT of the SUMS paid into the EX-CHEQUER, on Account of the LAND and MALT TAXES, between the 5th of April 1786 and the 5th of April 1787, as delivered into the HOUSE OF COMMONS.

L A N D T A X E S.

| | | | £. | s. | d. |
|------|----------------------------------|--------|-----------|-----------|------|
| 15th | — 3s. Aid, <i>An^o</i> | 1767 — | 525 | 8 | 6. |
| 22d | — — | 1775 — | 8,000 | — | — |
| 40th | — 4s. — | 1776 — | 500 | — | — |
| 42d | — — | 1778 — | 24 | 12 | 7½ |
| 43d | — — | 1779 — | 5,134 | 14 | 7 |
| 44th | — — | 1780 — | 1,672 | 15 | 11½ |
| 45th | — — | 1781 — | 329 | 15 | 1 |
| 46th | — — | 1782 — | 364 | 11 | 6 |
| 47th | — — | 1783 — | 13,096 | 2 | ¾ |
| 48th | — — | 1784 — | 155,637 | 15 | 2¼ |
| 49th | — — | 1785 — | 1,208,323 | 16 | 7½ |
| 50th | — — | 1786 — | 532,059 | 10 | — |
| | | | <hr/> | | |
| | | | £. | 1,925,919 | 2 1¼ |
| | | | <hr/> | | |

M A L T D U T I E S.

| | | | £. | s. | d. |
|-------------------------------------|--------|---|---------|---------|-----|
| Duty on Malt, <i>An^o</i> | 1784 | — | 1,317 | — | — |
| Ditto | — 1785 | — | 510,626 | — | — |
| | | | <hr/> | | |
| | | | £. | 511,943 | — — |

Exchequer,
the 17th day of April,
1787.

An

MISCELLANEOUS OBSERVATIONS.

By Mr. Pitt.

IN addition to what has been already advanced in the Annals, on the subject of the Evaporation of Dung and Earth, as connected with summer fallowing; I beg leave to make the following remarks, and to put the following queries, in hopes of stimulating gentlemen, who have sufficient philosophical, chemical, and agricultural knowledge, to settle this matter upon certain and incontrovertible principles.

The practice of sometimes summer fallowing cold wet heavy lands, has been so long and is so generally established, that one can scarce doubt its being right; and where the fallowing is completely managed the improvement is so very apparent, that one cannot but suspect something erroneous in the opposite theory.

It must, I think, be admitted by all, that the action of the sun upon earth, dung, or vegetables, carries off great quantities of other particles than the aqueous; but what becomes of such matter so carried off? is it annihilated? or is it not, more probably, suspended in the atmosphere, or in the air, near the earth's surface, till it comes in contact and unites with earth, vegetables, or such other bodies wherewith it has the greatest chemical affinity?

May

May it not be supposed that in very hot weather, when the powers of evaporation are greatest, the atmosphere by the action of the sun on terrene substances becomes fully saturated; that such saturation being effected, the particles, whether aqueous, nitrous, phlogistic, vitriolic, or of whatever kind, may be precipitated to the earth's surface and there combine with earth or vegetables according to the laws of chemical affinity?

Upon this idea, the great object of agriculture should be to prepare the earth in such manner; or to store it with such vegetables, as to have the greatest possible chemical affinity with phlogiston, or the food of plants, without regarding the powers of evaporation, as what is lost thereby is sure to be restored, and most liberally to him, whose earth or vegetables have the greatest chemical affinity with the evaporated particles.

EXPERIMENTS ON TURNIP- CABBAGE, &c.

By the same.

IN the spring of 1785, I procured from London one pound of turnip cabbage seed, and sowed it on a large bed in the garden the beginning of April,

April, the season being extremely dry, and watering being omitted, little more than an hundred of the plants ever arose ; these were planted out in a bed, and part of them saved for seed ; having so few, little notice was taken of their use for stock, but I saved 4 lb. of seed for farther experiment.

About the middle of April 1786, I procured a quantity of the seed from a person who had raised it from seed originally procured in Bristol, and sowed it thick immediately, on narrow garden beds, and had great plenty of plants ; in July following planted out 40 hundred (six score to the hundred) on a quarter of an acre of ground prepared as for turnips, the distance of half a yard asunder every way ; they were hand-hoed the same as turnips : in March following, they were from 3 to 5 lb. each ; taking the average at 4 lb. this produce is at the rate of 34 tons per acre and upwards.

At lady-day 1787, began to use them for stock, they chanced to grow in 28 rows, one row was taken up daily, and thrown to 12 young cattle of one and two-year old, which eat them clean up, and did as well as before at turnips ; they had no other food, except laying in a barley straw yard at nights ; I value these turnip-cabbage at 1s. per head per week, which is 2l. 8s. the above quantity, or 9l. 12s. per acre.

Several gentlemen, my neighbours, examined the crop, and agreed that the plant would be
highly

highly valuable for April, to whom I gave seed, with advice to sow early in the spring on rich ground, in hopes of the plant rooting larger ; but a terrible accident has this season attended the culture, which has nearly ruined the character of the plant in this country, the early sowings are almost universally run to seed ; consequently, after raising fine plants, preparing ground, and transplanting, the crop is of little or no value: I had not a single plant run to seed the former years till they had stood the winter.

The present year my first sowing was the beginning of March, of these, at least nine in ten run, and my neighbours are in the same predicament ; I sowed again the end of March, of these a few run, perhaps one in ten ; again, the middle of April, of these a few run rather more than in the middle sowing ; I sowed an acre broadcast with 2 lb. of seed the beginning of June, they have been hoed, look kindly, and not one of them is run.

I earnestly wish the cause and preventative of these and other cabbages running untimely to seed could be explained, whether owing to any secret in saving the seed, to sowing too early, to the age or phases of the moon at the time of sowing, which though some are confident in, I cannot but think weak and superstitious ; to an uncommonly mild winter as the last, in the spring following, in which much of the early sown garden turnips and borecole
ran

ran untimely to feed. As the culture of the great cabbages has taken place in this country, and will certainly increase and become a regular branch of agriculture instead of horticulture, and as the price of their seeds from our country seedsmen is no less than 6d. the ounce, I beg leave to put the following queries, which I hope some patriotic person who understands the subject will reply to, for the information and good of his countrymen.

1. What is the true and best method of saving cabbage seeds? Is there any better way than that recommended by Miller?

2. What are the causes of cabbages untimely running, and how is it prevented? Is it owing to ignorance in the true mode of saving the seed, to sowing at an improper time? Is there reason to think the phases of the moon have any influence, or to what other cause is it owing?

W. P I T T.

Pondesford, Aug. 10, 1787.

AVERAGE PRICES OF CORN FOR JUNE, 1787.

By the standard Winchester Bushel, of 8 Gallons.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|--------|---------------|----------------|--------------|---------------|
| London | 4 10 | 2 10 | 2 1 | 3 5 |

C O U N T I E S I N L A N D.

| | | | | |
|--------------|-----|------|------|------|
| Middlesex, | 5 0 | 3 0 | 2 6 | 4 0 |
| Surrey, | 5 1 | — | 2 3 | 4 4 |
| Hertford, | 4 9 | 2 11 | 2 3 | 4 2 |
| Bedford, | 4 8 | 2 9 | 2 2 | 3 9 |
| Cambridge, | 4 7 | — | 1 11 | 3 3 |
| Huntingdon, | 4 7 | — | 2 0 | 3 6 |
| Northampton, | 4 9 | 2 7 | 2 1 | 3 10 |
| Rutland, | 5 0 | 2 9 | 1 10 | 4 4 |
| Leicester, | 5 0 | 2 9 | 2 1 | 4 3 |
| Nottingham, | 5 2 | 3 2 | 2 4 | 4 4 |
| Derby, | 5 7 | — | 2 6 | 4 7 |
| Stafford, | 5 2 | 3 4 | 2 6 | 4 2 |
| Shropshire, | 5 1 | 3 1 | 2 2 | 5 1 |
| Hereford, | 4 7 | 3 1 | 2 1 | 4 10 |
| Worcester, | 4 7 | 3 0 | 2 4 | 3 9 |
| Warwick, | 4 6 | — | 2 2 | 3 12 |
| Gloucester, | 4 3 | 2 7 | 2 1 | 4 4 |
| Wiltshire, | 4 8 | 2 7 | 2 3 | 4 3 |
| Berks, | 4 9 | 2 11 | 2 4 | 3 9 |
| Oxford, | 4 7 | 3 0 | 2 5 | 3 11 |
| Bucks, | 4 7 | 2 10 | 2 4 | 3 9 |

C O U N T I E S

COUNTIES UPON THE COAST.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|-----------------|---------------|----------------|--------------|---------------|
| Essex | 4 10 | 2 9 | 2 1 | 3 7 |
| Suffolk | 4 6 | 2 6 | 2 1 | 3 3 |
| Norfolk | 4 6 | 2 6 | 2 2 | — |
| Lincoln | 4 10 | 2 5 | 1 11 | 3 6 |
| York | 5 4 | 3 2 | 2 4 | 4 5 |
| Durham | 5 7 | — | 2 4 | 4 3 |
| Northumberland | 4 7 | 2 11 | 2 2 | 4 3 |
| Cumberland | 5 6 | 2 6 | 2 2 | 4 4 |
| Westmoreland | 5 6 | 2 9 | 2 3 | — |
| Lancaster | 5 4 | 2 10 | 2 4 | 4 4 |
| Chester | 5 10 | 2 10 | 2 3 | — |
| Monmouth | 5 3 | 3 9 | 2 2 | — |
| Somerset | 5 2 | 3 3 | 2 3 | 4 1 |
| Devon | 5 3 | 2 10 | 1 8 | — |
| Cornwall | 5 3 | 2 10 | 1 7 | — |
| Dorset | 5 3 | 2 8 | 2 4 | 4 3 |
| Hampshire | 4 9 | 2 7 | 2 1 | 4 0 |
| Sussex | 4 8 | 2 8 | 2 2 | — |
| Kent | 4 8 | 2 11 | 2 3 | 3 2 |
| Wales | 5 2 | 2 9 | 1 7 | 4 5 |
| General average | 4 11 | 2 10 | 2 2 | 4 0 |

LONDON PRICES OF CORN FOR
JUNE 1787.

| <i>Grain.</i> | <i>Quarters.</i> | <i>Price.</i> | <i>Average per Quar.</i> |
|---------------|------------------|------------------|--------------------------|
| | | <i>£. s. d.</i> | <i>£. s. d.</i> |
| Barley | — 4972 — | 5822 7 2 | — 1 3 3 |
| Beans | — 4525 — | 6411 9 3 | — 1 8 3 |
| Malt | — 8063 — | 12857 3 7 | — 1 12 9 |
| Oats | — 16109 — | 12849 0 7 | — 0 16 11 |
| Peas | — 670 — | 1077 0 1 | — 1 12 3 |
| Rye | — 484 — | 649 15 4 | — 1 6 9 |
| Wheat | — 13622 — | 30432 7 9 | — 1 18 7 |
| | <u>48445</u> | <u>70099 3 9</u> | |

A N N A L S
O F
A G R I C U L T U R E.

MACHINE FOR ROOTING UP TREES.

By Mr. William Pitt.

Pendeford, January 1786.

S I R,

THE inclosed drawings have been the amusement of a few of the late long leisure evenings; I suspect they border rather too much on the marvellous for the generality of mankind; whether you do, or do not make any use of them, you are welcome to my trouble, who am,

Sir,

Your very humble Servant,

W. P I T T.

YOU having mentioned (vol. iii. p. 361) a machine of the late Count Bentinck, for drawing up trees by the root; brought to my recollection, some ideas which I had a few years ago entertained on that subject; which I had a strong inclination of trying, (having then connections in the timber trade)

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but which I was prevented doing by other more certain avocations.

The idea is borrowed from a very simple machine in common use for drawing up; or as it is called Winding up heavy timber for loading; consisting of a pair of strong pulley blocks, suspended from the top of three sound poles by a hook or center pin; generally three or four pullies in each block; and by which, two, three, or four horses drawing at the rope, will pretty easily raise as many tons.

Instead of three poles or legs, four are here proposed, which must be of sufficient strength, and well bound with iron at the top. A and B, fig. 1, two of the legs, the other two being supposed to be exactly behind them; and instead of the common arrangement of pullies, that of the ingenious Mr. Smeaton is proposed*; consisting of a larger and a smaller tier of pullies in each block, and five pullies in each tier, the rope C, or D, coming through the middle pully of the upper block, by which means the blocks are kept perpendicular; in this arrangement of pullies, the force or power applied is to the effect as 1 to 20; the rope C, is supposed to be continued and to be drawn at by horses, and a force of 10, 15, or 20 hundred weight at this rope will keep in equilibrium as many tons at the chain W.

* Described in the Philosophical Transactions, vol. 47. and since copied into dictionaries of arts and sciences, and other treatises on mechanics.

But without the use of horses, the power of this machine may be increased in any degree assigned, by application of the wheel and pinion, and axis in peritrochio; the force being applied at F gives motion to the wheel with its pinion of four leaves; and ratchet wheel; to this ratchet wheel is applied a catch, (but here covered by the wheel G) which falling into the notches of the ratchet wheel, prevents it going back when the handles are loosed; the pinion gives motion to the wheel G of 48 teeth, fixed upon the same center with the barrel whose section is shewn at E; this barrel of six inches diameter, receives the rope D; the power of the whole machine may be thus estimated: The wheel F being five feet diameter, and the barrel E only six inches, gains a purchase of 10 to one: the pinion having only four leaves, and the wheel G having 48 teeth, gains a purchase of 12 to one; and the pulleys gain 20 to one, the whole power is $10 \times 12 \times 20 = 2400$ to one; or a force of 1lb. applied at F, will keep in equilibrium 2400 lb. at W.

But equilibrium is not motion, therefore allowing the one-half for friction, which will doubtless be more than sufficient, if the centers are kept in order; then a force of one hundred weight applied below F, will act at W, with a force equal to 60 tons.

As the power of this machine is so very great, the motion will of course be proportionably slow; to remedy which in practice, a windlass may be fixed

up on the center of the barrel E, which may be used to tighten the pullies, and so long as its power is sufficient, and to prevent its motion from being impeded, the center of the wheel F, and its pinion should be constructed moveable, to be shifted away (by sliding endways, or otherwise) when not wanted, and again applied when its force may be necessary; also it will be proper to have a ratchet wheel and catch fixed to the barrel E, to prevent a retrograde motion in case of loosing the windlafs.

Supposing the radices of the windlafs on the barrel E, to be two feet, then any force there applied, will be to the effect at W, as one to 160, no allowance being made for friction; which will be considerably less in this case, than when the wheel and pinion is also applied.

Fig. 2, A transverse section of the machine, the same letters referring to the same subjects as in Fig. 1; also K, a third leg or pole, the fourth being supposed behind it; P, a ratchet wheel on the barrel E, the catch being supposed behind the frame. D, the middle rope from the upper block; to avoid confusion the other ropes are not represented.

The best application of force to the wheel F, in practice, would, probably, be for a man to walk or climb on its circumference a little above H, by which the whole weight of a man would be applied to it, without any other effort than is made in climbing

climbing a ladder ; in this case the wheel must be properly constructed for such application of force.

The whole machine might be commodiously fixed on cills, mounted on low wheels or rollers, and moved from tree to tree by a horse, or by men without taking down, as its height need not be considerable.

It is evident to any one conversant in mechanics, that the power of this machine may be increased or multiplied in any degree assigned ; as for instance, by the application of another pinion on the center E, to give motion to another tooth wheel and barrel : it is equally evident that what is thus gained in power is in all cases lost in time ; and though mechanics do readily afford sufficient power to overcome any resistance, yet, perhaps, no human ingenuity, can construct tackles of sufficient strength, to overcome the resistance of the large roots of full grown trees, interwoven and intangled in the soil, whose strength admits not of calculation.

The combination here given is simple, cheap, easily applied in practice, and its power very great ; and, well executed, would probably be astonishing in effect.

ON THE ACACIA, OR LOCUST-TREE.

By Governor Pownall.

To the Editor.

S I R,

I HAVE read in the 38th No. of your very valuable and useful work *The Annals of Agriculture*, an account which Mr. Harrison gives of the uses to which the timber of the acacia or locust-tree have been applied with great advantage in ship-building, as in making *bolts* and *trenails* of it, &c. I could, if it were necessary to add any confirmation to a report formed on experiments made by a person so well informed in science as Mr. Harrison is, confirm this from accounts I had from a gentleman concerned in shipping at New-York.

When I consider that a view to *this use only* and to a distant speculative demand, would scarce become a motive to the planting of this tree ; or if it did it would be in such parts only as were conveniently situated for carriage to ship-yards ; and as I have learnt that the timber of this tree may be applied to much more extensive uses in country business, to uses which every improver in farming may have for it ; and that the culture of this tree might prove at the same time the most profitable culture for such barren light gravel or sandy lands as are
not

not very profitably cultivated in any other way, I am induced to communicate to you the following information as a ground for experiment.

Several gentlemen in the State New-York, who were great improvers, and encouragers of improvement, in farming, found, upon repeated trial, that *posts for rail-fencing* made of the acacia or locust-tree, *stood wet and dry next the ground* better than any other timber posts in common use, almost as well as cedar *posts* of the *swamp cedar*.

If this shall upon a like trial of the acacia or locust-tree planted in England, be found to answer in like manner in this country, a *desideratum* will be supplied in a matter of great importance in inclosures.

It may be here, however, necessary to make an observation, which may be a caution at the same time in the applying of this wood to ship-building: That in America where this tree grows wild in the woods, it generally grows in a barren sandy or light soil; whereas in England from the delicate appearance of its foliage, and in consideration that it is an exotic coming from a warmer summer-climate, it is supposed to be of a tender and delicate constitution, and hath been therefore generally propagated in a rich soil. It hath from this circumstance run up too fast in its growth, and hath formed its timber faster than it could carry its hardness and tenacity up with it. Hence it hath been a common observation that it

out grows its strength and is very apt to split and lose large branches. It is, therefore, from these, my ideas are of a difference in the timber of the acacia or locust-tree between that run up with a quick growth in a rich soil and that of a slower growth in a poor soil, that when I recommend it as above I desire to be understood only as to the latter. I do not say that the former would not answer, but I speak of the latter as having upon experience answered in the uses I mentioned.

If any person should, with a view to these important uses, be induced to plant the acacia or locust-tree, it should be planted in a light dry soil : in such soil the timber will prove the better ; whilst on the other hand the improving such soils in the culture of this tree might turn out the best use that parts of such soil could be applied to. I have here, at Everton, some acacias grown up in a dry sandy soil mixt with cherty brown sand-stones that rise in flat small pieces. Those trees have a rough hardy appearance of foresters, are not inconsiderable timber of the kind, and have grown up slowly.

I am, Sir, with great respect,

Your obedient humble servant,

W. POWNALL

Everton-House, July 30, 1787.

MACHINE

MACHINE FOR REAPING CORN.

By Mr. William Pitt, of Pendeford.

IN pursuance of the idea contained in Mr. Lofft's translation, from Pliny and Palladius, vol. iv. p. 205, the enclosed drawings are designs for a machine for reaping, or rather rippling corn in harvest, by an horse or ox. The farther prosecution of this idea, is earnestly recommended to Mr. Winlaw; as preparatory to his rubbing mill; as were it brought to perfection, the business of rippling being cheaply and expeditiously done in the field, the corn is rendered fit for the rubbing mill, without farther preparation. Fig. 1. Section of the machine to be pushed forward by an horse or ox; as the machine goes forward, the wheel A gives motion to the pulley B, fixed on the same center, and by means of the band C, to the pulley D, and tooth wheel E, which latter gives motion to the pinion F, and rippling cylinder G, the rippling cylinder going round twice, for the wheel A once, and its iron combs or teeth, rippling off the ears of corn in rotation, let them fall into the small car H, from whence a man with a prong or shovel is to remove them into the great car K, which being filled, the beast may be turned the contrary way, and the whole drawn to the store-rooms.

The

The grain thus collected in a short time of the most favourable weather, the straw may be cut and collected at leisure, and with less regard to rain or showers than is necessarily the case in the common mode of harvesting.

Fig. 2. Plan of the machine ; the same letters referring to the same particulars as before.

W. P.

ON LAND DRAINING.

By James Young, Esq. of Clare.

DEAR SIR,

THE forcible arguments you made use of when I had last the pleasure of meeting you, have determined me to communicate to you the mode of land-draining I have practised these several years.

Little use or advantage would be derived from my enumerating the failures and disappointments I met with in many of the experiments which I have made ; suffice it to say, I have every reason to prefer my present method ; and I will endeavour to give it to you in such plain terms as shall be within the comprehension of every common farmer : my grand wish is to remove that dread of the expence which has prevented many from land draining their farms, and to impress on the minds of farmers the same opinion I have of it : I know, from experience,

ence, that in clayey soils it will answer perfectly, that it is the least expensive and the most expeditious, as well as most durable improvement of any in the whole system of agricultural œconomy.

I have a field that used to be so wet and poachy in the winter, as not to be able to bear the weight of a sheep, I land-drained and fallowed it, then sowed it with wheat, without any manure, and had a crop equal to half the value of the land.

During the wet weather, about the middle of last April, I examined a field of six acres, which I land-drained in the month of November, in the year 1773, and had the satisfaction to find every drain in the field (except one) running.

I do not pretend to determine what sort of soil will be most benefited by land-draining; in my opinion, there is scarce any land in a clayey country, except moor or deep loam, but will be greatly improved by it, and in particular, wherever the horsetail (*Equisetum Arvense*) abounds, a man will be very seldom disappointed in expecting to be repaid the expence by the first crop.

I hold it right never to draw the drains straight down a hill, but obliquely across it, with a descent just sufficient to give the water a fall into a leading ditch; there are some fields where a leading ditch must be covered. I contrive almost every method to have as few covered as possible; I like to have every drain independent; and have carried it so far as to have open ditches cut on purpose.

When

When I have marked the drains in a field, (usually a rod asunder) I draw two furrows with a common foot plough, leaving a baulk betwixt them, about 15 inches wide; then with a strong double-breasted plough, made on purpose, I split that baulk and leave a clean furrow, 14 or 15 inches below the surface; but where the depth of soil requires it, for I like to touch the clay, by a second ploughing I sink it to 18 or 20 inches, it is then ready for the land-ditching spade, with which I dig 15 inches deep, a drain as narrow as possible. It is an invariable rule with me never to suffer the man who digs to cover up the drain, but it is left open for me or my bailiff to examine, and then it is well filled up to the shoulder with wheat-stubble, cut and stacked for the purpose immediately after the harvest, and a small stick or two at the out-let to prevent its being stopped by any external accident. Lastly, with a common plough, I turn a furrow of the upper soil, or mould upon the drain, taking care not to turn in any of the dead soil, raised by the land-ditch spade, which ought always to be laid on the outside, and scattered over the land.

It is right not to let the drains lie open any length of time, lest they get injured by wet or frost; my general rule is to fill them up every day.

That I may not be misunderstood in the description of my tools, I have taken the liberty to send the spade and scoop I make use of, to be placed in
your

your museum for the information of those who may think it worth while to examine them.

It is not easy to ascertain the price of carting the wheat-stubble to the place where it will be wanted, and stacking it, because the value must depend upon the distance ; it is equally difficult to say, what the work of the ploughs ought to be valued at, for though several acres may be drawn out in a day with one plough, yet, I never chuse to do above two or three hours work at a time ; therefore, I shall leave every farmer to fix his own price upon these parts of the business, only desiring him to consider, that it is work that will wait for a leisure time, and frequently, if the horses were not so employed, they would earn nothing.

I pay for digging the land drains, one shilling and eight-pence, and for filling them up with stubble, four-pence per score rods, without any beer whatever ; an active man, used to the work, where the soil is not stoney, will dig 23 or 24 rods in a day, within working hours.

The state of the expence, that is, the money a farmer will pay out of his pocket for land-draining an acre of land, will stand thus :

| | £. | s. | d. |
|-----------------------------------|----|----|----|
| For cutting and raking together, | | | |
| an acre of wheat-stubble, ge- | } | 0 | : |
| nerally sufficient for an acre of | | | |
| drains - - - - - | | | |
| | | 2 | : |
| | | | 0 |

Digging

| | £. | s. | d. |
|------------------------------------|-------|------|-------|
| Digging eight score rods of drains | 0 | : 13 | : 4 |
| Filling them up with stubble - | 0 | : 2 | : 8 |
| Extra-work with the common | 0 | : | 1 : 4 |
| spade, on an average, a day's | | | |
| work of a man - - - - | | | |
| | <hr/> | | |
| | 0 | : 19 | : 4 |
| | <hr/> | | |

Thus in as plain and concise a manner as possible, I have given you the whole process to be disposed of in whatever manner you shall think proper. I have not ventured to broach a single idea on the theory of land-draining, let time and experiment ascertain its effect, you know it wants not philosophy to encourage the trial.

I am, with great esteem,

Your obedient humble servant,

JAMES YOUNG.

NOTICES ON GRAZING IN LINCOLNSHIRE.

By Thomas Ruggles, Esq.

S I R

IN the beginning of last June, I made an excursion into Lincolnshire with a view to make myself acquainted with some branches of agriculture practised

practised in the different parts of that county; but particularly to see the rich pastures, and large sheep which produce the long wool for our manufactories, my tour was through Cambridge, Huntingdon, Stamford, Grantham, Lincoln, Horncastle, Boston, Spalding, Crowland, and Peterborough; variety of objects were consequently subject to my attention, exclusive of agriculture, but I mean to confine this letter almost entirely to the topic of grazing.

In the Earl of Exeter's park at Burghley, a considerable number of black and white Spanish sheep attracted my attention; and I was informed that the stock had been grazed there many years, and that there were at that time in the park, between seven and eight hundred, but I was not then able to obtain any further intelligence than that it had been the practice to have the wool manufactured into cloth, which was given away to the poor of Stamford; and in my evening's walk to see the gateway of a college founded in Stamford in the reign of Edward the Third, and called Brazen-Nose, I had some conversation with the keeper of the workhouse, to which this old gateway is an approach, who informed me, that he bought the wool last year for the poor to work up; that each fleece weighed about five pounds; that the wool was fine, but much damaged, and short; the price seventeen shillings a tod; that the manufacture worked from it

it consisted principally of stockings, and that the stock of sheep was much degenerated; I was not able to obtain any information with respect to the carcase, either as to weight, flavour, or price.

The difficulty of procuring intelligence on agricultural subjects which may be depended on, I found greater than I had imagined; it was my intention to have gained some information relative to the culture of sainfoin, as there are many fields of it in the country about Lincoln, but I was not in luck: the only farmer I could find disposed to favour me with any communication on the subject, had rendered himself incapable, through the previous effects of his too convivial disposition; thus disappointed, I had not much increased the stock of my ideas on the several subjects of my enquiry, until I met, at Horncastle, with a very intelligent gentleman and a considerable occupier of land, who is well known in that country for his laudable endeavours and good success in promoting that best of all plans for disburthening the country of some of that load of expence and tax on the landed property occasioned by the maintenance of the poor; a plan which arose from the pressing necessity of the time, when Lincolnshire wool was sunk under half its present value, and which occasioned an exertion of the principal gentry and occupiers of land in that county, highly laudable in its spirit and tendency, and efficacious in its event. The plan al-

luded

luded to is the promotion of *schools of industry* in every parish, where the rising generation is encouraged by rewards and proper honours to the most industrious and deserving; by which means their conduct in early life gives firm and flattering hopes of their becoming useful and industrious members of society. The last printed account of the state of their respective schools; their regulations; &c. shall be sent for your perusal, as I must confess myself of opinion, it will be of general service to make the plan public by means of your Annals.

Boston was the principal scene of grazing, to which I bent my attention; and there I had the fortune to meet with a gentleman to whom I had no other introduction than a note from a friend, expressing my wishes and the objects of my enquiry; who, with great politeness, united great power of satisfying my curiosity; the following notices I must, therefore, acknowledge I owe entirely to his communication, and extensive concerns in the rich pasture lands which surround that town.

The component particles of their rich soil I had not means to analyze, and can, therefore, only speak of its general appearance, that it is a dark-coloured sandy loam; the herbage is uncommonly thick, close, and soft to the foot, and exclusive of weeds, of which fewer are seen than in any pastures I have elsewhere taken notice of, the following vegetables predominate; vernal grass, rough cocksfoot grass,

field-brome grass, perennial clover, white Dutch clover; but the vernal grass is in the proportion of ten to one of any other plant, except the white Dutch clover, and that is in the proportion of a hundred to one of all the other vegetables taken together; the rent of this land is about forty-five shillings an acre, (always excepting the price when particular convenience pays for particular pastures) the stock, the land carries, is one bullock, and six or seven sheep an acre; for example; a pasture containing fourteen acres fattens fifteen beasts and a hundred sheep, another pasture containing fifteen acres, fattens fifteen beasts and a hundred and ten sheep; the bullocks are bred in the neighbourhood; the bulls from the county of Durham; the price from the straw-yard was this year, at an average, ten pounds fifteen shillings each; they are in general fat by Michaelmas, and weigh about eighty stone, (fourteen pounds to the stone) each; if any remain in hand till winter, which I understood was seldom the case, they are then put to hay; I saw one bullock in a pasture belonging to this gentleman which measured seven feet one inch in height, and from the top of the poll to the tip of the tail, full fifteen feet, it was supposed to weigh at the time I saw it, one hundred and fifty stone, and to have lost in a few weeks, from lameness, arising from its great weight, at least ten stone; it was six years old.

The

The price of their sheep is various ; the last stock bought in by this gentleman, averaged at thirty-four shillings each ; before they are sheared they are called hogs, afterwards shearings ; they are sheared three times, and then sent to market naked ; the quantity of wool is about two sheep and a quarter to a tod, viz. twenty-eight pounds ; the staple of the second shearing is the longest. I was favoured with specimens of a variety of staples differing in length and fineness, the length was from ten inches to eleven and half ; it was imagined that many of the sheep I handled, had on them at that time above half a tod of wool ; they sell when fat, which is after the third shearing, at different prices, running between two and three pounds, and are generally sent up to the London markets ; they are sheared at the expence of two-pence each sheep, and an assistant to bring them to the shearer ; the stock on this grazing farm was upwards of eighteen hundred in the winter, and between two and three thousand in the summer.

So amazingly fruitful are these pastures, that the stock which I have already mentioned them to have, they carry through the summer, except for three weeks, when they are put into the meadows, which were mowed for hay, to take off the eddish or after grass ; of the reduced winter stock, those which are fat have nothing but grass in the deepest snows ; for this purpose, pieces of pasture where there is grass

are preserved for them, and here the sheep find sufficient food to keep up their condition ; and it seems that the most exposed situation is preferred for this purpose ; because, if they have much shelter, they will lie still, and not take the trouble of getting sufficient food to keep up their carcases ; hay is found to waste their inside fat, and not increase it.

It is not usual about Boston to see any of their pastures out of condition, yet some are so, and this arises from their being constantly mowed, or improperly stocked ; these are recovered by stable and farm-yard muck, collected and kept together a year, and stirred over ; this is laid on in the months of April, May, and June, to the amount of twenty-five load an acre, each load calculated at two ton, but I think it cannot weigh so much ; it is carried on in large two-wheel carts, drawn by four horses, and spread immediately ; the grass will be through the manure in a fortnight, and in this time may the pasture be stocked ; I saw many acres purchased by this gentleman, which he estimated as not worth more than twenty shillings an acre, and bought it at such valuation, recovered to the full value of the best pastures, by the means abovementioned ; and when once recovered, the soil wants no farther assistance, unless it is improperly stocked, or frequently mowed.

Mr. Bakewell's Leicestershire sheep have been tried in these pastures, but not with equal success as
their

their own breed: the Yorkshire sheep have also been grazed here, and the length of their wool has been encreased a full inch, which is what some skilful Yorkshire grazers thought not probable.

I perceive my notices of the Boston grazing, are exhausted; I should have mentioned the name of the gentleman, from whom I have collected this information, but forgot to ask his permission, although I did not forget to inform him, that the purport of my enquiries was to give my friend, the Editor of the Annals of Agriculture, all the information on the subject I could collect, and, therefore, had his permission to use my pencil and memorandum book.

T. R.

Note.—The names of the grasses are taken from Hudson's Flora Anglica.

ON THE CHEMICAL ANALYSIS OF SOILS.

Translated from the Italian of Fabbroni.

By the Editor.

THE philosophical examination by chemical analysis of the phœnomena of vegetation, assures us, that plants thrive the most abundantly in soils so adapted to their nature, as to contain

the same equal portions of those principles, which nourish and are found in them; that is to say, absorbent, argillaceous, and siliceous earths, with oleaginous and saline particles. Five simple primitive earths are known; of these three, are absorbent, one fusible, and one vitrescent: their names, 1. Barytes, or terra ponderosa. 2. Magnesia. 3. Calcareous. 4. Siliceous. 5. Argillaceous. Experience instructs us, that the soil most propitious to vegetation, is not confined particularly to any of these; but allowed by the common consent of naturalists and cultivators to be a compound of three; siliceous for the greater part, and calcareous and argillaceous for the lesser; and known both by the ancients and moderns, under the name of marga, or marle.

Various are the proportions in which it is found, mixed on the surface of the globe; but that which seems every where most favourable to vegetation, is that which consists of one-third of chalk, half of sand, and a fifth of clay*. The further the soil is from this proportion, the less adapted will it be to vegetation.

* Baumé analyzing an earth, reputed fertile, found that it contained a half of gravel, stone, and insoluble particles; a third of absorbent earth; and a fifth of clay. His analysis, however, was not conducted in a method sufficiently exact. To ascertain the mixture, which would be incontestibly the best and most favourable to vegetation, would demand a continued series of experiments made on a large scale.

In order to try the effective and natural fertility of a soil, we ought to dig up a specimen of ten square *foldi* of earth (that is to say, a cube of ten *foldi* every way) each ten or twenty *stiora*, and such specimens would probably unite the smallest varieties in their contents, and ought to be accumulated, perfectly mixed, and then submitted to the following easy test: Take, for example, a pound of such earth, well dried, pound and triturate it as intimately as possible, in a metal or marble mortar; cast it in 20lb. of water, agitate it strongly, and in a few moments pour off the turbid water. Wash the remains with water, till it runs off clear, and dry the residuum that is left. This can only be gravel, sand, chalky earth, or barytes, which will be found in the earth to be examined, and which must be weighed, and an account taken of the weight. The turbid water will soon deposit the earth, and having by such deposition become clear, must be poured off from the soil, which is then to be spread to dry. Drop into the water, thus poured off, either some vinegar, or oil of vitriol, much diluted, and after a certain time filter it. If the water be evaporated to dryness, and leaves in this second instance a white saline earth, the weight of it will indicate the quantity of absorbent earth found in the soil thus examined*. Whatever is wanting

* Every kind of soluble earth as magnesia, lime, clay, metallic earth, &c.

of the weight is magnesia, lime, clay, or bituminous, or oleaginous earth; the more of clay, the more fertile. To take, therefore, specimens of earth in this manner, and discover the proportions of their component parts, enables you to class their fertility, and to see by what is wanting in the soil examined the regulation of its value*.

There are a thousand other chemical ways of examining the proportions in soils of the three ingredients, chalk, sand, and clay; and thereby to discover which is the best, that is, most fit for vegetation. But they are too troublesome for a land-valuer to apply, who does not want so much a rigorous precision, as a sufficient approximation towards it; I shall not, however, omit to indicate other easy ones, of which the following is the best: If you keep in a digesting heat for some time in good vinegar, the earth to be examined, after having weighed and dried it well, then pour off the acid, and dry the earth again, and weigh it; the heat will have made all the absorbent earth, (I say absorbent in general, for though it will for the major-part be calcareous alone, yet it will rarely be found without a mixture of magnesia, and of crocus martis, both soluble in acids,)

* Gross and imperfect as this method is, it will serve excellently well, because it is easy of application: a rigorous exactness is not so much wanting, as a mode of comparison. It will be found by experience, sufficient for judging of the fertility of a soil to know merely the quantity of soluble earth that is found in every specimen.

taken up by the acid. The residual earth, if boiled in a glass vessel, with oil of vitriol, diluted with distilled water; and after pouring off the liquor, again dried and weighed, what you will then have lost of the original weight will be the clay; and the other residuum must be insoluble, or siliceous earth.

For the use of those who have any reason for wishing for a greater degree of precision in the analysis of soils, I shall add, compendiously, another and more exact method. After having well dried the earth to be examined, weigh it accurately, and wash it in a small quantity of distilled water for separating the salts; then keep it in a digesting heat, or boil it in a sufficient portion of spirit of salt, or marine acid. The residuum which remains undissolved, after pouring off the fluid thus washed, must be dried and weighed. This may be siliceous earth, sand, or a mixture of both; ponderous spar, chalk, (*gesso*,) &c. to be examined afterwards, if necessary. The fluid abovementioned may contain, besides lime, many other species of dissolved earth to be examined thus: First, see if pouring some drops of oil of tartar, first boiled on a large quantity of Prussian blue (that is to say, phlogisticated alkali) occasions a turbidness, and precipitates a blue powder, which is iron or barytes: to separate which, boil the blue Prussian in new spirit of salt, upon which, then pour a few drops of oil of vitriol: this will cause a white precipitation, a sixth-part taken from

from its weight, you will have the true weight of the barytes. The blue precipitate, then purified from the aforeſaid, and dried, will give five-fixths of its weight deducted, the real weight of iron contained in the earth thus analyz'd. To the fluid above-mentioned, purged of its iron and barytes, add oil of tartar, till it ceases to produce any turbidneſs, and then wait till a depoſition takes place, and the liquor clears. This depoſition ſhould be waſhed and dried, and heated red hot by the fire. Then waſh it ſpeedily in a large portion of diſtilled water, and boil it enough to ſeparate all the lime; the weight of which will be found by the weight loſt by the earth by this waſhing; and if to this, we add oil of vitriol, and boil it till it is diſſolved, and afterwards put into the liquor much diluted, ſo much chalk (*creta*) by little pinches, till the acid of the liquor is ſaturated ſufficiently to precipitate the clay, which dried and weighed, takes away one-third of its weight, from the effective weight of the earth. For what remains in the liquor, if cauſtic volatile alkali be added, it will precipitate magnesia, if it contains any.

A very good method in the examination of ſoils, is to recur to the hydroſtatical ballance, an inſtrument eaſy to transport, and to manage, and faithful in its indication. Take for that purpoſe, a cubical foot of earth from the place that is to be valued, or more than one from various ſpots, if the
quality

quality is different, that the specimen may preserve a similitude to every part. When thus collected, take a given portion, ten pound for example, but first washed and perfectly dried, put it in a metal box of a known and specified weight, and with some holes to give vent to the air, and then weigh it immersed in water; the absolute weight which it has in air, being divided by the quantity of weight lost in water, gives in the result the specific gravity of the earth to be valued.

By such an easy medium, the estimator may judge securely of the intrinsic goodness of a soil, having a table formed of the specific gravity that is found in divers mixtures of earths made artificially *, as well substances oily or saline, but more still, the broken particles of vegetables, which constitute the best possible earth, *turf*, are of a specific gravity, less than the earth itself, it will necessarily diminish considerably the gravity of the earth in which they are found, and give indication of goodness by their abundance, their lightness, being of less specific gravity than the mixture to be ex-

* Besides the precaution of separating the salts from the earth that is to be weighed, which would alter the weight, by varying the specific gravity of the water, which ought to be either distilled, or of rain; it is besides necessary, that it be well dried, and that the temperature of the air around be kept artificially the same, if not, it must be noted, in order to make the reduction; it being known, that the specific gravity of a body is not the same in summer as it is in spring

mined.

mined. On the contrary, stones, will degrade the goodness of the best soils, particularly, as they diminish the superficies, and are of a gravity greater than that of the earth properly called, being weighed hydrostatically with the same, and will indicate by increasing the weight of the mixture, the less effective value of the soil which produces them. Calcareous stones are reduced by the effect of vegetation, alterable by the air, and are consequently less useful in a field than vitrescent, argillaceous, or siliceous ones. These last are of a specific gravity, greater than the first; the hydrostatical balance will, therefore, announce by a greater specific weight, that the earth contains them, and is relatively worse in proportion as it produces them. A mixture made in some manner artificially, and before weighing hydrostatically, with all precision and exactness, will enable you to form a table*, which

* Various soils, weighed hydrostatically, with the precautions here indicated, have given the following result, the barometer being at 27.7, and the thermometer at 13.

| | | |
|---|------------------------|--------|
| 1. The fertile soil of a wood | - - - - - | 1,530. |
| 2. A kindly soil | - - - - - | 1,582 |
| 3. Green marle | - - - - - | 1,591 |
| 4. Fertile earth of a friable staple | - - - - - | 2,100 |
| 5. Volcanic earth (<i>tufacea</i>) which does well for vines | - - - - - - - - - - | 2,111 |
| 6. Friable reddish earth | - - - - - | 2,131 |
| 7. Strong land for wheat, vetches, &c. | - - - - - | 2,160 |
| 8. Earth of a mountain, where they cultivate olives, barley, &c. | - - - - - - - - - - | 2,200 |
| 9. Sandy sterile land | - - - - - | 2,210 |

being

being at hand will guide the valuer on any sudden occasion in the nature of any soils †. It may be well to conclude, from the specimen, salts and vegetable substances comminuted, but not yet reduced to earth, and which when so reunited, is called turf; the way is to wash it in plenty of water, not so much because they will affect the justness of the weight, as for the reasons I will give upon another occasion.

ON THE SMUT IN WHEAT.

S-I R,

THE forty-fourth number of Annals of Agriculture, falling accidentally under my eye, I perused Mr. Holmes's letter on smut in wheat, with a considerable portion of astonishment. He asserts, that there never was, nor ever will be, discovered, an infallible method to prevent that fatal

† It must not be thought, with those who have not attended to it, that the hydrostatic balance is a complicated instrument, or difficult to manage; this balance has like the other, at one end, a box of metal or glass destined to be immersed in water, with the substance to be weighed, and on the other, the usual basin with a counter weight, that forms an equilibrium with the box immersed. It is not necessary to use the common weights, but more commodious to have an invariable one, for the quantity of earth destined to be weighed, which being divided into a thousand equal parts, will enable you to see at once, and to express the specific gravity.

malady.

malady. Without pretending to assign any probable cause, why wheat is frequently so affected, I can both from my own experience, and that of my neighbours, who followed my directions, point out a method, that I am perfectly convinced never will miscarry. If the situation will admit of it, let the wheat be steeped twelve hours in sea-water; and on its first immersion, let it be well stirred about to enable the dross and light corn to swim at the top. When this is accomplished, take a tin cullender, and collect whatever appears upon the surface—let it then remain undisturbed the space I have mentioned; and at its expiration, drain from it the water as near as possible. Take then some lime as fresh from the kiln as you can meet with it, and slake as much as you think will effectually tincture every grain you have thus prepared; let it be well sifted over, and thoroughly mixed with a shovel; let it thus remain twelve hours more, and then employ the shovel again in turning it over, and breaking the lumps, if any should appear. When this is done, it wants nothing but keeping to make it fit for sowing, which ought not to be till three days afterwards, at least; but, if it is kept a month, it will sustain no injury. I have made, and been witness to fifty trials of this kind, and never saw it fail in the smallest instance. I have sometimes sown a head land with corn as it came from the flail, and always found it more or less affected with smut. I
have

have likewise made many experiments with the seed thus cured, from the first mixture of the lime, to the end of the three days I have mentioned, and they were all in some measure subject to the disease; though in a much less degree than when it was sown in its natural state. Hence it is clear, that it is to the operation of the lime, that the prevention of the malady is principally indebted. If sea-water cannot be procured, a mixture of common-water with salt will be equally effectual. The seedsman will probably find fault with the lime blowing in his eyes, but a piece of crape hatband tied before them, will readily prevent that inconvenience. Whoever pursues this method, I would risque every thing I hold dear, will never be disappointed.

I am, S I R,

Your obedient servant,

W. C.

Lynn, Sept. 5, 1787.

It is totally immaterial, whether wheat thus prepared, was one-sixth part smut, or quite free from the disorder.

EXPE-

EXPERIMENTS.

By William Belcher, Esq.

[Continued from page 341. vol. vii.]

THE issue of these pots sown with tares, was, that the baked earth still recovered, after the plants had grown awhile, its superiority, but destroying the tares in the summer and sowing barley again, the effect has ceased, so that it was but temporary, lasting about two years, but had been great, and as lasting as a slight coat of dung. To try this experiment on light earth.—In May 1787, I sowed barley in two pots of very sandy earth, and found baking as serviceable to that, as it was to loamy earth.

*Continuation of EXPERIMENT No. 3, from vol. viii.
page 119, line 23.*

February 19, cut off part of the rows of wheat, of that sown in May, and of that sown the September before; for that sown in May had continued in strong grass throughout the winter, indeed a mild one, and now continued its progress towards earing, as if no winter had intervened. On being cut down, that sown in May shot up stronger, but hardly quite so thick as that sown in September, and the row sown in May, the half cut down, and that

that left was very strong, and both parts proportionably and considerably forwarder than the early autumnal.

By other experiments, I have found early autumnal and winter fallowing not important; but ploughing in the height of summer the most efficacious in destroying bad weeds of perennial growth. That old wheat just threshed will grow as well as new, and come up just as soon. And that seeds vegetate in poor ground as soon as in rich.—I also find that on cropped ground, the dung of folded sheep is not lasting.—*And* I had better wheat in 1787, where a load of horse-dung was spread and exposed many weeks on fallow, in hot weather the summer before, than where it was not exposed at all.

W. BELCHER.

Mr. Harries wishing (vol. viii. p. 104.) to be informed concerning the cultivation of Filberts, I, having a plantation myself, transmit with pleasure the following circumstances concerning them, a tribute due to the circle of the Annals, though it is a Kentish branch of knowledge:

Though by no means necessary to their growth, it is the usual mode to raise them in hop-grounds at twelve feet apart, whilst sometimes cherry, but more commonly apple-trees, where an orchard is intended, are also planted. I have raised Barce-

lona nut-trees from the nut, which bear very well in England, but the fruit is inferior to filberts. These Miller directs to be raised rather from layers than suckers, because, he says, plants raised from suckers, are more apt to cast them, the case with all trees. As to the Kentish planters, they know nothing of raising them for layers, but do it from suckers, but which it is the best way to train previously in a nursery, and there, and afterwards, to take off the suckers annually, and also when the plants increase, to prune them annually, to reduce them within bounds, and render them fruitful; for the hops are not always taken up, when the filberts arrive at perfection, but both crop together. The best soil for them is a strong loam, with a kind of clayey or marley bottom, what is hereabouts termed coorney, whereon they bear greatly; the fruit is large and fine, and not maggotty. An acre has been sometimes sold for fifty pounds.

In treating of woods, I might have observed, that in coppices, willow mixed with other kinds, as ash and chefnut, or both, has a very good effect in assisting them, by keeping under the weeds and grass, by means of its spreading growth.

AN ACCOUNT OF THE PARISH OF HETHEL.

To the Editor.

DEAR SIR,

I SEND you an account of the parish of Hethel, in Norfolk, communicated to me, by the Rev. Miles Beevor.

And am, your's, &c.

J. ORD.

| Years. | | Baptisms. | | Burials. |
|--------|-------|-----------|-------|----------|
| 1711 | _____ | 4 | _____ | 1 |
| 1712 | _____ | 3 | _____ | 2 |
| 1713 | _____ | 3 | _____ | 1 |
| 1714 | _____ | 4 | _____ | 3 |
| 1715 | _____ | 5 | _____ | 0 |
| 1716 | _____ | 3 | _____ | 1 |
| 1717 | _____ | 5 | _____ | 1 |
| 1718 | _____ | 2 | _____ | 2 |
| 1719 | _____ | 3 | _____ | 0 |
| 1720 | _____ | 2 | _____ | 0 |
| 1721 | _____ | 3 | _____ | 2 |
| 1722 | _____ | 0 | _____ | 1 |
| 1723 | _____ | 2 | _____ | 1 |
| 1724 | _____ | 1 | _____ | 2 |
| 1725 | _____ | 1 | _____ | 2 |
| 1726 | _____ | 2 | _____ | 1 |
| 1727 | _____ | 3 | _____ | 5 |
| 1728 | _____ | 2 | _____ | 1 |

| Years. | | Baptisms. | | Burials. |
|-------------------------|-------|-----------|-------|----------|
| 1729 | _____ | 1 | _____ | 9 |
| 1730 | _____ | 0 | _____ | 2 |
| 1731 | _____ | 1 | _____ | 2 |
| 1732 | _____ | 1 | _____ | 2 |
| 1733 | _____ | 1 | _____ | 1 |
| 1734 | _____ | 0 | _____ | 1 |
| 1735 | _____ | 5 | _____ | 0 |
| 1736 | _____ | 3 | _____ | 3 |
| 1737 | _____ | 2 | _____ | 0 |
| 1738 | _____ | 2 | _____ | 3 |
| 1739 | _____ | 3 | _____ | 5 |
| 1740 | _____ | 1 | _____ | 2 |
| 1741 | _____ | 1 | _____ | 2 |
| 1742 | _____ | 1 | _____ | 1 |
| 1743 | _____ | 0 | _____ | 3 |
| 1744 | _____ | 2 | _____ | 3 |
| 1745 | _____ | 1 | _____ | 4 |
| 1746 | _____ | 0 | _____ | 0 |
| 1747 | _____ | 1 | _____ | 6 |
| 1748 | _____ | 0 | _____ | 2 |
| <hr/> | | <hr/> | | <hr/> |
| 1st period 38 years. | | 74 | | 77 |

| Years. | | Baptisms. | | Burials. |
|--------|-------|-----------|-------|----------|
| 1749 | _____ | 2 | _____ | 1 |
| 1750 | _____ | 1 | _____ | 2 |
| 1751 | _____ | 0 | _____ | 2 |
| 1752 | _____ | 2 | _____ | 2 |
| 1753 | _____ | 1 | _____ | 0 |
| | | | | 1754 |

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| Years. | | Baptisms. | | Burials. |
|--------|-------|-----------|-------|----------|
| 1754 | _____ | 3 | _____ | 2 |
| 1755 | _____ | 3 | _____ | 0 |
| 1756 | _____ | 5 | _____ | 3 |
| 1757 | _____ | 5 | _____ | 0 |
| 1758 | _____ | 4 | _____ | 2 |
| 1759 | _____ | 6 | _____ | 3 |
| 1760 | _____ | 4 | _____ | 1 |
| 1761 | _____ | 7 | _____ | 3 |
| 1762 | _____ | 7 | _____ | 2 |
| 1763 | _____ | 4 | _____ | 0 |
| 1764 | _____ | 7 | _____ | 1 |
| 1765 | _____ | 4 | _____ | 2 |
| 1766 | _____ | 6 | _____ | 2 |
| 1767 | _____ | 4 | _____ | 4 |
| 1768 | _____ | 7 | _____ | 5 |
| 1769 | _____ | 3 | _____ | 0 |
| 1770 | _____ | 7 | _____ | 2 |
| 1771 | _____ | 3 | _____ | 1 |
| 1772 | _____ | 3 | _____ | 5 |
| 1773 | _____ | 2 | _____ | 3 |
| 1774 | _____ | 0 | _____ | 2 |
| 1775 | _____ | 7 | _____ | 0 |
| 1776 | _____ | 7 | _____ | 0 |
| 1777 | _____ | 3 | _____ | 2 |
| 1778 | _____ | 4 | _____ | 2 |
| 1779 | _____ | 2 | _____ | 3 |
| 1780 | _____ | 9 | _____ | 4 |
| 1781 | _____ | 6 | _____ | 1 |

1782

| Years. | | Baptisms. | | Burials. |
|-----------|------|-----------|------|----------|
| 1782 | ———— | 0 | ———— | 5 |
| 1783 | ———— | 3 | ———— | 4 |
| 1784 | ———— | 6 | ———— | 3 |
| 1785 | ———— | 1 | ———— | 2 |
| 1786 | ———— | 3 | ———— | 7 |
| <hr/> | | <hr/> | | <hr/> |
| 20 period | | 151 | | 83 |
| 38 years. | | | | |

It may be worth while to observe the great difference between the baptisms and burials from 1751 to 1772, being a period of 20 years; although upon the strictest enquiry, no satisfactory reasons are to be assigned for this difference.

The number of inhabitants in the parish of Hethel, taken September 20, 1787, were 149.—The number of houses that pay to the the window-tax 5.—Total number of houses in the parish 17, whereof 9 are single, and 7 double, and 1 contains 6 families.

By the return made to parliament in the year 1776, it appears, that the sum of money raised by poor's rate, was 46l. 10s. and by the return made to parliament, in the year 1786, it appears, that the sum of money so raised, was 72l. So that the poor's rate, within the last ten years, is increased 25l. 10s. but it should be observed, that one material cause for this rapid increase, proceeds from a heavy expence incurred by the parish, in maintaining a woman, who is disordered in her mind, together with a numerous family of small children.

EXPERIMENT OF FEEDING OFF
SPRING-SOWN WHEAT WITH
SHEEP.

To the Editor.

S I R,

HAVING taken notice of an experiment made, by William Belcher, Esq. upon a quantity of wheat sown in May, and also that gentleman's opinion thereupon, published in No. 44, of your Annals; I am induced to communicate to you the following circumstance, which fell within the compass of my knowledge.

In May 1785, the Earl of Orford sowed about eight acres of wheat, at Houghton, which was sent to him from Devonshire. In the month of July following, being upon a visit to his lordship, I had an opportunity of examining this wheat, which I perceived not to be spindled, or even likely to be so during that summer.—I, therefore, took the liberty of recommending to his lordship (it being a particular dry and scorching season, and the grass in the park very scanty) to make the experiment of feeding off this spring sown wheat with his sheep, and letting it stand as a crop for the ensuing year. His lordship professed himself to be pleased with my idea; and accordingly it was fed off three separate times before Christmas.—The ground at
that

that season, appeared to be entirely bare, inasmuch, that six acres were ploughed up, upon the supposition, that the plants were all perished. But two acres were left, (by the special interference of his lordship,) which I had again the pleasure of viewing in July 1786, the crop was then in full ear—quite free from weeds—and promised to be at least equally productive, as other neighbouring crops of wheat.—I wish I could have the satisfaction of communicating a farther result of this experiment; but the grain being reaped, and by mistake, mixed with other wheat, the specific produce of it could not be ascertained.

If this, however, may be the means of affording either instruction or amusement to any of your ingenious correspondents, or readers, my end will be fully answered.

I am, S I R,

Your humble servant,

MILES BEEVOR.

Hethel, Sept. 22,

1787.

E R R A T U M.

Page 109, of this volume, in the total of burials, *for 142, read 42*: by a mistake of the printer, the periods are unequally divided, whereas they were meant by Mr. Le Blanc to be of 27 years each.

A N N A L S
O F
A G R I C U L T U R E.

TOUR IN CATALONIA.

By the Editor.

A RESIDENCE of some weeks at Bagnere de Luchon, in the Pyrenees, afforded me an opportunity of seeing a part of Catalonia. The fame of that province for industry and for cultivation is great ; the Catalans have been long reckoned the most active people in Spain ; and I was taught to believe in conversation, as well as from reading, that that province might with propriety be called the garden of Spain, being, with its neighbour Valentia, infinitely better cultivated than any other part of the kingdom ; full of these expectations, my friend Monf. Lazowski, did me the favour of accompanying me : we hired mules and a guide to

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conduct us to Barcelona, across the Pyrenees, with intention to return to France by Roussillon.

July 10th, 1787. We left Bagnere de Luchon, and crossed the mountains to Vielle, the first town on the Spanish side; the Pyrenees are so great an object of examination in whatever light they are considered, but especially, in that of agriculture, that it would be adding a great deal too much to the length of this paper to speak of them here; I shall on another occasion be particular in describing the husbandry practised in them, and at present stop no longer than to mention the pasturage of Catalonian sheep in them. By a little detour out of our direct road, and by passing Hospital, which is the name of a solitary wretched inn, we gained the heights, but free from snow, which the Spaniards hire of the French for the pasturage of their flocks. I must observe, that a considerable part of the mountains belong in property to the communities of the respective parishes, and are disposed of by what we should call the vestry: they hire a very considerable range of many miles. The French mountains, on which they pasture, are four hours distant from Bagnere de Luchon, and belong to that town, those hours are more than 20 English miles, and are the most distant part of the parish. To arrive at them, we followed the river Pique, which upon the maps is sometimes called the Neste. The whole way it runs in a torrent, and falls in
cascades

cascades of many stories, formed either by large pieces of rock, or by trees carried down and stopped by stones. The current, in process of ages, has worn itself deep glens to pass through, at the bottom of which the tumbling of the water is heard, but can be seen only at breaks in the wood, which hang over and darken the scene. The road, as it is called, passes generally by the river, but hangs, if I may use the expression, like a shelf on the mountain side, and is truly dreadful to the inhabitants of plains, from being broken by gullies, and sloping on the edges of precipices: it is, however, passable by mules, and by the horses of the mountains. The vale grows so narrow at last that it is not above 100 yards wide in some places. The general scene at last has little wood; the mountains on the South side, finish in a pyramidical rock of micaceous schistus, which is constantly tumbling into the plain, from the attacks of the frost, and the melting of the snows, the slope to the river being spread with the fragments. Met here with pieces of lead ore and manganese. On the northern ridge, bearing to the West, are the pastures of the Spanish flocks. This ridge is not, however, the whole, there are two other mountains, quite in a different situation, and the sheep travel from one to another as the pasturage is short or plentiful. I examined the soil of these mountain pastures, and found it in general stoney; what in the West of England

would be called a *stone brash*, with some mixture of loam, and in a few places a little peaty. The plants are many of them untouched by the sheep: many ferns, narcissus, violets, &c. * but burnet, *poterium sanguisorba*) and the narrow-leaved plantain (*plantago lanceolata*) were eaten as may be supposed close. I looked for trefoils, but found scarcely any: It was very apparent, that soil and peculiarity of herbage had little to do in rendering these heights proper for sheep. In the northern parts of Europe, the tops of mountains half the height of these, for we were above snow in July, are bogs, all are so, which I have seen in our islands, or at least, the proportion of dry land is very trifling to that which is extremely wet: Here they are in general very dry; now a great range of dry land, let the plants be what they may, will in every country suit sheep. The flock is brought every night to one spot, which is situated at the end of the valley on the river I have mentioned, and near the port or passage of Picada: It is a level spot sheltered from all winds. The soil is 8 or 9 inches deep of old dung, not at all inclosed: from the freedom from wood all around it, seems to be chosen partly for safety against wolves and bears. Near it is a very large stone, or rather rock, fallen from the mountain. This the shepherds have taken for a shelter, and have built a hut against it; their beds

* See Appendix to this paper.

are sheep-skins, and their door so small that they crawl in. I saw no place for fire, but they have it since they dress here the flesh of their sheep, and in the night sometimes keep off the bears, by whirling fire-brands: four of them belonging to the flock mentioned above lie here. Viewed their flock very carefully, and by means of our guide and interpreter, made some enquires of the shepherds, which they answered readily, and very civilly. A Spaniard at Venasque, a city in the Pyrenees, gives 600 livres, French, (the livre is 10½d. English) a year, for the pasturage of this flock of 2000 sheep: In the winter he sends them into the lower parts of Catalonia, a journey of 12 or 13 days, and when the snow is melted enough in the spring, they are conducted back again. They are the whole year kept in motion, and moving from spot to spot, which is owing to the great range they every where have of pasture. They are always in the open air, never housed or under cover, and never taste of any food, but what they can find on the hills.

Four shepherds, and from four to six large Spanish dogs have the care of this flock, the latter are in France called of the Pyrenees breed; they are black and white, of the size of a large wolf, a large head and neck, armed with collars stuck with iron spikes, no wolf can stand against them; but bears are more potent adversaries; if a bear can reach a

tree he is safe, he rises on his hind legs, with his back to the tree, and set the dogs at defiance. In the night the shepherds rely entirely on their dogs, but on hearing them bark are ready with fire-arms, as the dogs rarely bark if a bear is not at hand. I was surprized to find that they are fed only with bread and milk. The head shepherd is paid 120 livres a year wages and bread ; the others 80 livres and bread. But they are allowed to keep goats, of which they have many which they milk every day ; their food is milk and bread, except the flesh of such sheep or lambs as accidents give them. The head shepherd keeps on the mountain top, or an elevated spot from whence he can the better see around while the flock traverses the declivities. In doing this the sheep are exposed to great danger in places that are stoney ; for by walking among the rocks, and especially the goats, they move the stones, which, rolling down the hills, acquire an accelerated force enough to knock a man down, and sheep are often killed by them ; yet we saw how alert they were to avoid such stones, and cautiously on their guard against them. Examine the sheep attentively. They are in general polled, but some have horns ; which in the rams turn backwards behind the ears and project half a circle forward ; the ewes' horns turn also behind the ears, but do not project : the legs white or reddish ; speckled faces, some white some reddish ; they would weigh fat, I reckon, on
an

an average, from 15lb. to 18lb. a quarter. Some tails short, some left long. A few black sheep among them: some with a very little tuft of wool on their foreheads. On the whole they resemble those on the South Downs; their legs are as short as those of that breed; a point which merits observation, as they travel so much and so well. Their shape is very good; round ribs and flat strait backs; and would with us be reckoned handsome sheep; all in good order and flesh. In order to be still better acquainted with them, I desired one of the shepherds to catch a ram for me to feel, and examine the wool, which I found very thick and good of the carding sort as may be supposed. I took a specimen of it, and also of a hoggit, or lamb of last year. In regard to the mellow softness under the skin, which, in Mr. Bakewell's opinion, is a strong indication of a good breed, with a disposition to fatten, he had it in a much superior degree to many of our English breeds, to the full as much so as the South Downs, which are, for that point, the best short-woolled sheep which I know in England; the fleece was on his back, and weighed, as I guessed about 8lb. English, but the average they say of the flock is from four to five, as I calculated by reducing the Catalonian pound of 12 oz. to ours of 16, and is all sold to the French at 30s. the lb. French. This ram had the wool of the back part of his neck tied close and the upper tuft tied a second

knot by way of ornament, nor do they ever shear this part of the fleece for that reason; we saw several in the flock with this species of decoration. They said that this ram would sell in Catalonia for 20 livres. A circumstance which cannot be too much commended, and deserves universal imitation, is the extreme docility they accustom them to; when I desired the shepherd to catch one of his rams, I supposed he would do it with his crook; or probably not be able to do it at all; but he walked into the flock, and singling out a ram and a goat bid them follow him, which they did immediately, and he talked to them while they were obeying him, holding out his hand as if to give them something. By this method he brought me the ram, which I caught, and held without difficulty.

Having satisfied ourselves with our examination of this flock, we returned to the direct road for Viella, which quits the river above described about a small league from Bagnere; it enters soon after one of the most wooded regions of the Pyrenees, and at the same time the most romantic. The road is so bad that no horse but those of the mountains could pass it; but our mules trod securely amidst rolling stones on the edges of the precipices of a tremendous depth, but sure-footed as they are, they are not free from stumbling, and when they happen to trip a little in those situations, they electrify their riders in a manner not altogether so pleasant as Mr. Walker.

These

These mountains are chiefly rocks of schistus, micaceous, but there are large detached fragments of granite. Pass the frontier line which divides France and Spain; and rising on the mountains, see the Spanish valley of Aran, with the river Garronne, winding through it in a beautiful manner. The town of Bofoste is at the foot of the mountains where is the Spanish custom-house; mules imported into Spain pay here 16 livres. A four year old horse the same. A six year old one 13 ditto. An ox 5. And a sheep $1\frac{1}{2}$ fol. This vale of Aran is richly cultivated, and without any fallows. Nothing scarcely can be finer than the view of the valley from heights so great as to render the most common objects interesting; the road leads under trees, whose arching boughs present at every ten paces new landships. The woods here are thick, and present fine masses of shade; the rocks large, and every outline bold; and the verdant vale that is spread far below at your feet, has all the features of beauty in contrast with the sublimity of the surrounding mountains. Descend into this vale, and bait at our first Spanish inn. No hay, no corn, no meat, no windows; but cheap; eggs and bread, and some trout for 15 sous. ($7\frac{1}{2}$ d. English.)

Follow from hence the Garronne, which is already a fine river, but very rapid; on it they float many trees to their saw-mills, to cut into boards; we saw many at work. The vale is narrow, but the

the hills to the left are cultivated high up. No fallows. They have little wheat, but a great deal of rye; and much better barley than in the French mountains; instead of fallows they have maiz and millet, and many more potatoes than in the French mountains. Haricots (French beans) also, and a little hemp; saw two fields of vetches and square pease. The small potatoes they give to their pigs, which do very well on them; and the leaves to their cows, but assert that they refuse the roots. Buck-wheat also takes the place of fallow, many crops of it were good, and some as fine as possible.

The whole valley of Aran is well cultivated and highly peopled, it is eight hours long, or about 40 miles English, and has in it 32 villages. These villages, or rather little towns, have a very pretty appearance, the walls being well built, and the houses all well slated; but on entering these towns, the spectacle changes at once; we found them the abodes of poverty and wretchedness; not one window of glass to be seen in a whole town; scarcely any chimnies, both ground floor and the chambers vomiting the smoke out of the windows.

Arrive at Vielle, the capital of this valley, and the passage from this part of France to Barcelona, a circumstance which has given some trifling resources to it, informed here, that we could not go into Spain without a passport, waited therefore on the
governor

governor who presides over the whole valley and its 32 towns; his house was the only one we had seen with glass windows, he is a lieutenant-colonel, and Knight of Calatrava; in his anti room, the king's picture with a canopy of state over it: the governor received us with the Spanish formality, and assured us that a few months ago, there was an order to send every foreigner, found without a passport, to the troops: such orders shew pretty well the number of foreigners here; on each side of his bed was a brace of pistols, and a crucifix in the middle, we did not ask in which he put the most confidence.

Made enquiries concerning their agriculture; they have no farmers. Every one cultivates his own land, which is never fallowed. A journal of meadow sells in the valley for 800 livres, irrigated, but by no means so well as in the French mountains, nearly an arpent of Paris, which is something more than an English acre. The lower arable lands are sold for 5 or 600 livres, the sides of the hills proportionably; and the higher lands not more than a 100. Their crops of all sorts vary from $2\frac{1}{2}$ to 3 quarters English the acre. Hay harvest no where begun. They have no species of manufactures, but spinning and weaving for the private use of every family. The price of labour 10 sous a day and food; women for hoeing, &c. $2\frac{1}{2}$ sous and food.

The

The mountains belong, as in the French Pyrenees, to the parishes ; each inhabitant has a right to cut what wood he pleases for fuel and repairs, in the woods assigned for that purpose ; others are let by lease at public auction for the benefit of the parish, the trees to be cut being marked ; and, in general, the police of their woods is better than on the French side ; when woods are cut they are preserved for the next growth. Their mountain pastures not used by themselves, they let to the owners of large flocks, who bring them from the lower part of Catalonia, as with the French mountains ; these flocks rise to 4000 sheep, the rent, in general, being from 5 to 7 sous a head for the summer food. Every inhabitant possesses cattle, which he keeps in the common mountains in what quantity he pleases ; but others who do not belong to the parish, pay 5 to 7 sous a head for the sheep, and 10 sous for a cow ; which disproportion they explain, by saying, that sheep must have a much greater range. In summer they make cheese, which we tasted and found good. In winter their cattle are kept at home, and their cows fed on buck-wheat straw, which they assert to be good food ; also that of maiz and millet, and a little hay ; most of it being assigned to their mules. They have good sheep, but all are sent to Saragosa or Barcelona. Have scarce any oxen ; what few they kill, they salt for winter.

Taxes

Taxes are light; the whole which this town is assessed at, being only 2700 livres, which they pay by the rent of their woods and pastures let: but if calculated by tailles, houses, &c. and including every thing, the amount would be about 3 livres a year, on a journal of 600 livres value. This is the proportion of an acre of land worth 30l. paying 3s. a year in lieu of land and all other taxes. When the principles of a government tend to despotism, and the very pictures of kings treated with reverence, the consequence is light taxation; the only effectual means of insuring a great revenue, is to extend the principles and the exercise of liberty; the change is, and ever will be, as much for the benefit of the prince, as of the subject.

At Bagnere de Luchon we were told that the inn at Vielle was good. We found the lower floor a stable, from which we mounted to a black kitchen, and through that to a baking-room with a large batch of loaves making for an oven which was heating to receive them. In this room were two beds for all the travellers that might come; if too numerous, straw is spread on the floor, and you may rest as you can. No glass to the windows; and a large hole in the cieling to clamber into the garret above it, where the windows are without shutters to keep out either rain or wind. One of the beds was occupied, so my companion laid on a table.

a table. The house, however, afforded eggs for an omlet, good bread, thick wine, brandy, and fowls killed after we arrived. The people very dirty, but civil.

July 11th left Vielle, and took that route to Barcelona, which is by the *port* (passage across the mountains) of Pias; another somewhat shorter being represented to us as exceedingly steep and difficult, and the country to that city worse. Coming out of Vielle, see to the right some of the most stoney land I have ever beheld, yet good hemp and buck-wheat were growing on it. In the hedges all the plants common to them in England*. The pastures on the mountains good quite to the snow; but the low meadows not watered with the attention given by the French in their Pyrenees. Pass several of the 32 villages of the valley of Aran; population very great, for they crowd on each other; and this results here from the division of property, and not from manufactures, which have more than once been supposed the only origin of great population.

Pass Arteas and Jasa; cross a river that falls in to the Garonne, and afterwards the Garonne itself on a high flat arch. A striking view of the mountains over Arteas, three features, one wooded, another rock, and a third snow. The trees floating down the Garonne, strike their ends against the

* Appendix.

rocks in it, and make a most singular noise, very much like thunder. Pass Salardeau and Tradoze, which is the last village of the valley, and near it the source of the river Garonne to the left; but a stream to the right which joins it, and by which we passed, seems rather larger. Much millefolium here, and other plants common with us *. Plough with bullocks; all we saw, pale reddish or cream-coloured, and with horns. All the villages we have seen, wretched; smoke out of the windows. Vast rocks of granite rolled promiscuously from the mountains, innumerable springs pouring down their side, but at only a small height above the river. The water here, they told us, was too cold to use in irrigation, and that the land gave much more hay at Vielle. Rise to the very top of the Pyrenees, much above some of the remaining snow, and from thence have a tremendous view of ridges of mountains one beyond another in Catalonia, to the distance of 50 or 60 miles; many of them with snowy tops. It took us four hours and three quarters to get to the top, yet when we began to ascend, we must have been, if we may judge by the rapidity of the Garonne, for several hundred miles hence to Bourdeaux, on some of the highest land in Europe. No wood at the top, but pasturage and rocks of micaceous schistus; met a great herd of

* See Appendix, where I shall give the names of the plants, I observed on this and other occasions.

dry cows and oxen at the top, cream-coloured. It is remarkable, that a pale reddish cream-colour holds from Calais quite across France, hither, with very little variation.

Springs now flow towards the Mediterranean. Pass a church by itself in the descent, and a beautiful cascade of five or six different sheets of water among wood for 500 feet fall; a vast rock above it; a great and savage view. Flocks of sheep, and a pen for oxen and cows; the latter milked for cheese. Plough with oxen in yokes and bows as in England, and not yoked by the horns as in the South of France. Come to fallows (which is a point of worse husbandry than we have seen for some time) manuring by asses, loaded with baskets. The trees here (pines) are finer than on the French side; they are all cut for the Toulouse market, being carried over the mountains, and floated down the Garonne; from whence we may draw conclusions on the comparative demand of the two kingdoms. Land here sells at 4 to 500 livres the journal.

Pass a spot, where an earthquake threw down a part of a mountain, stopped a stream and formed a large pond; it must have been a dreadful convulsion, for it is now a waste of immense fragments of rock, large as cottages, that are tumbled about in such ruinous confusion, as to be truly horrible to view. The tradition is, that four men and their mules were buried under them. Come to the valley

ley d'Esteredano, where wheat and rye are cut. Every scrap on the descent is cultivated ; an extensive savage view of mountain, with patches of culture scattered about the declivities : but fallows are found here. The prospect down the vale beautiful ; it is without fallows, fine hemp instead of them. Look down on the town of Esteredano, around which, culture rises pretty high up the mountains. All the corn cut, is reaped, and bound in sheaves — Walnuts. — Descend into the vale. — Figs — Watered meadows. — Ray-grass predominates ; much common clover, white clover, trefoil, vetch, &c. A caufway for irrigation across the vale ; the meadows are uncut, and have $2\frac{1}{2}$ tons per acre, on an average ; the corn all through three quarters an acre. Pass a rich flat common, part of this vale fed by horses, mules, hogs, asses, and a few oxen. — The vale closes, and we cross an arch at the junction of two rivers ; all savage pendent rocks. Rafters are now formed of plank and trees, and floated down the river. A stubble ploughed up, and manuring for a second crop. Reach Scullow : the inn so bad, that our guide would not permit us to enter it, so he went to the house of the Curè : A scene followed so new to English eyes, that we could not refrain from laughing very heartily. Not a pane of glass in the whole town, but our reverend host had a chimney in his kitchen ; he ran to the river to catch trout ; a man brought

us some chickens which were put to death on the spot.—For light they kindled splinters of pitch-pine, and two merry wenches, with three or four men, collected to stare at us, as well as we at them, were presently busy in satisfying our hunger. They gave us red wine so dreadfully putrid from the borachio, that I could not touch it. Brandy, but poisoned with aniseed, what then to do? A bottle of excellent rich white wine came forth, resembling good mountain, all was well; but when we came to examine our beds there was only one; my friend would again do the honours and insisted on my taking it, he made his on a table; and what with bugs, fleas, rats, and mice, slept not. I was not attacked, and though the bed and a pavement might be ranked in the same class of softness, fatigue converted it to down. This town and its inhabitants are, to the eye, equally wretched, the smoke holes instead of chimneys, the total want of glass windows—the cheerfulness of which, to the eye, is known only by the want—the dress of the women all in black, with cloth of the same colour about their heads, and hanging half down their backs—no shoes—no stockings—the effect upon the whole dismal—savagely as the rocks and mountains.

July 12th, proceed:—the hills on each side now almost close, and just admit the river, the road, and a scrap of meadow. The rocks are in thin lamellæ; schistus; but some micaceous. A lime-kiln shews
some

some calcareous ; meet lavender, for the first time spontaneous. Pass Briasca, a village perched on a mountain like an eagle's nest. A fold of goats. Grass mown, and some cleared. Come to Labourfel, another village, where is an iron forge, where steel and iron are made at the same time, and the furnace blown by the fall of water simply without bellows : the water falls about ten feet, and the air moved is recieved in a sort of tunnel which points to the center of the fire : the bottom of the mass of melted metal is steel ; the middle of it soft, and the upper part hard iron. They burn charcoal made of pine wood. Cross the river, the vale now consists simply of the river, the road hangs on the mountain like a shelf—all rock. Pass Rudàse on the top of a rocky mountain, come presently to vines, figs, and fruit trees ; snow in sight. As we descend to the vale every spot is cultivated that is capable of being so. Cross the river to Realp, about which place is much cultivation, as the mountains slope more gently than hitherto. Hedges of pomegranates in blossom ; the town is long and has shops ; hemp is the great object in it, of this they make ropes, twine of all sorts, bags, and have some looms for converting it into cloth. Corn and hay all carried on panniers. Pass Sort, a vale spoiled by the river, which exhibited the depredations of the Italian rivers so excellently described by my learned

friend Mr. Professor Symonds: dine at a dreadful auberge, which, instead of satisfying, offended all the senses we were masters of.

Hitherto, in Catalonia, we have seen nothing to confirm the character that has been given of it; scarcely any thing has a tolerable appearance. It is much to be questioned, from our intelligence, whether they have any such thing as a farmer who rents land: only patches of property—no maiz, and French beans very poor—fallows every where on the hills, and yet the rye after them miserable. Old vineyards of late quite neglected, over-run with weeds, yet the grapes of a size that shew what the climate is, they are now as big as pease—In the towns every thing as bad; all poor and miserable.

Come to Jarè, about which place things wear a much better appearance, owing to an immense salt work of the king. It is a very powerful salt spring which is raised to the evaporating pans by a huge wheel, and conducted by well contrived conduits to an immense extent of evaporation, covering many acres; the whole work is carried on with much intelligence, and every thing in it seems active and alive: a charge of $2\frac{1}{2}$ quintals, each of 100lb. is sold for exportation at 3 livres, but to the natives at 16 livres, 5 sous.—Here first meet with olives; what meadows there are, are well watered, as are French beans, hemp, and a small quantity of lucerne. Rising up the mountain, which is all of
pudding-

stone, we find it is all cut into terraces, supported by many walls, with rows of vines on them for raisins, not wine. Mulberries, and olives : But here are fallows, and I thought I perceived traces of these hills having been formerly more cultivated than at present.

The road then led through a pass in the mountains which presented, I think without exception, the most striking scene that I had ever beheld : I remember the impression which the ocean made on me the first time I saw it, and believe it to have been weaker than this : I shall not spend many words in attempting to describe what the pencil itself, in the hands of a master, would fail to convey an adequate idea of. The pass is above a mile long, the rocks seem rent asunder to make way for the river, which entirely fills the bottom of chasm, the road is cut out of the rock, and was wrought with gunpowder, a work of prodigious labour and expence : it passes at heights great enough to vary the scene and to give the depth below the eye, which is always interesting ; but in general it is low in the pass, and near the water. The mountains of stone, which rise on either side, are the most tremendous in their height, magnitude, and pendent form, that imagination can conceive. Were all the rocks of England piled on one another, they would form but pigmy heaps, compared with these gigantic and stupendous masses. Rocks are commonly,

even in their most bold appearances, detached parts of mountains; and however great in themselves, have masses above them which lessen their effect: It is otherwise here: if we suppose the skeletons of mountains laid bare to the eye, it will be but a vague idea; vastness of size, perpendicularity of form; pendent and protruding—every circumstance that can give a power to inanimate nature to arrest and command attention, is spread forth with an imposing magnificence, through every feature of this sublime scenery.

Pass Colagase *. Come to a regular vineyard, the rows 12 feet asunder, the intervals alternate fallow and corn. The features of the country now begin to relax, the mountains are not so high, and the vales are wider. The leaves of a good mulberry-tree sell for 44 fous, or 22d. English. Arrive at Poeblar, after a fatiguing journey of 36 English miles, more than half of which, as in general, we made on foot.

Here we fared sumptuously, for report made the inn so bad, that we took refuge with a shop keeper; It seems an extraordinary circumstance, that in these parts of Spain you ride to the door of a private house and demand lodging and food, and pay for it,

* I ought to observe once for all, that the spelling of the names of these Spanish towns and villages, must sometimes be erroneous as I have not had hitherto an opportunity of consulting the best maps of Catalonia.

of course what they demand; however, it must always be taken into the account of our fare, that the wine of all the country is so poisoned with the borachio, that water is the best beverage, unless aniseed brandy should be to your taste; salads also, a principal dish with them, are not eatable, owing to all the oil of the country being strong and rancid, a quality which the inhabitants seem to think essential to good oil, for they every where gave it the highest praises. This town has some good houses with glass windows, and we saw a well-dressed young lady gallanted by two monks.

The 13th, leave that town; they have lucern, but not good; the gardens are all watered; mulberries; price of silk this year 18 livres the pound. Cultivation all around, among the olive trees, but it is corn one year and fallow another. Cross the river, which is here 60 yards wide. Wheels for raising the water of it into the gardens, 10 or 12 feet high. They are of a very simple construction; they are something like the common water-wheels of a mill, but made very light, the fellies of the wheel are hollow in divisions, taking the water in through holes at equal distances, and as the stream turns the wheel, it delivers the water out of the same holes at the top of its revolution into a trough, which conducts it where wanted. It is cheap, simple, and effectual. Many peach-trees scattered about the gardens &c. Mount the hills, pass two

large tracts of above 100 acres destroyed by the torrents. Great quantity of pudding-stones. The mountains around are of interesting and bold features. The country in general here has a great mixture of cultivation and waste, it is for some space pleasing enough to the eye, but the produce is, I believe, very low; we saw many oats, and scarcely any that will produce more than a quarter an acre—they have no meadows, and I should observe that our mules have not found such a thing as hay; straw and barley are their food; in all those spots which would give grass, corn and legumes are sown, as more necessary and more valuable; and this I am told is the case over all Spain, lucerne excepted. The mountains and wastes have no sheep, only goats. Many walnut-trees full of fruit. Every thing is tithed by the church—see much corn threshing every where.

Cross two pieces that had rye last year, left now to weeds, and will be under rye again next year; an extraordinary course. Mulberry-leaves never fold, but if so, the price would not be less than $4\frac{1}{2}$ livres a tree. Cows all red. Land in the vale sells at 20 to 25*l*. English the journal. The road leads up Monte Schia, the whole of which consists of a white stone, and argillaceous marle. Snow on the distant mountains. They have here poor crops of flat barley: of water they know well the value, a spring of great account being carefully conducted into a reservoir,

a reservoir, and let out at seven in the morn and at night to water a garden, and a piece of French beans. Look back over a great prospect, but totally to the eye without wood. Cross a hill to another great vale, where is much, and some rich cultivation, as the hills are not steep, but sloping. Here is some good hemp watered: and I see enough of the country to find that water is all in all; where that is to be conducted they get crops that pay well; but where no water, they have not the power or the knowledge to turn the soil, however good it may be to a profitable account; fallow the only effort, and the success every where miserable. Ourcasò a poor place; there, as every where else, the first floor always a stable, which is cleaned out not more than once or twice a year when the land is ready to receive the dung; the delicious effluvia, therefore, given to the rest of the house may be conjectured; rising into the kitchen and the chambers, it there meets with such a variety of other unfavoury essences as to form compounds sufficient to puzzle the most dextrous of the aerial philosophers to analyze. All their white wine here is boiled. Descend mountains terraced for olives, which grow well in rocks, but add nothing to their beauty; insomuch, that cloathing a naked country with this most ugly of all trees, adds nothing to the pleasure of the eye: Cross great wastes, which in other countries would be sheepwalks, but none here, for five sixths of the spontaneous

neous growth are aromatic plants : Cross a fine stream with many acres under it, yet no watering ; the reason I cannot tell, unless the land is common ; if so it is easily explained. The whole hill has been formed almost entirely of shells, which burn into good lime. Pass in sight of St. Roma, near it the road leads by a small round lake, but it is on very high ground, no hills near it ; it is said to be very deep. Here they were hoeing a barley stubble, just ploughed, to form ridges, on which they sow French beans—This district is called that of shells : millet just up ; pass a large waste almost entirely covered with lavender ; corn on a part of it ; but after a crop they leave it to weeds to recover again. Here, also, they practise the alternate husbandry of one bed, or broad ridge, corn, and another fallow. Plough with cream-coloured oxen. In breaking up the wastes here they cut the spontaneous growth to dry, then pile it into heaps with the earth pared and placed on it ; this is all burned ; we saw heaps ready to be burned to the quantity of 500 loads an acre : but the crops are wretched for many miles, scarcely the seed again. The soil stoney, the large, of the pudding class ; but, in the midst of this arid, wretched desert, come to a spring, which rises out of the earth into a small reservoir, and is immediately used for irrigation ; maize, hemp, cabbages, beans, and all fine ; the contrast shews the astonishing effect of water, and that in this climate the soil

is.

is the least object—the sun and water do the whole.

In our enquiries meet with some traces of what in France are called *Metayers*, that is, a sort of farmers who cultivate the land for half the produce; the landlord taking one half and the tenant the other.

Pass up a great waste mountain, which commands a vast prospect of distant mountains W. S. W. from us; they are in Arragon; very high, and seen one beyond another to a great distance; also the snowy ones of the Pyrenees, which we have left. Following the road it opens to an immense view of what at first appears to be a plain, a great range of country towards the sea, but it is all broken in mountainous ridges, which appear low only on comparison with the greater heights from which we view them. The Pyrenees in one great chain to the left, and the mountains of Tortosa to the right.

Descend: for $2\frac{1}{2}$ hours pass a waste mountain covered with shrubs, and scattered with evergreen oaks, and lower down the evident remains of old terraces which have once been cultivated, but now over-run with weeds. To Fulca, where we stop for the night at an inn, kept by a considerable farmer, and meet, for Spain, with tolerable accommodation. The ploughs here have all long beams as in the south of France, which reach to the yokes of the oxen, and consequently they have no traces; two small sticks form all the mould board; they plough all flat. We had here in the evening a most tremendous

mendous tempest; the lightening which I have seen in England has been mere glimmerings in comparison with the dreadful coruscations of this ardent and electric atmosphere. A range of the Pyrenees was in sight for near 100 miles in a line; the forked flashes of the lightening darted in streams of fire to the length of half that extent, and much of it from an immense height. The colour was of the brightest whiteness; the scene was great, awful, and sublime.

The 14th, in the morn took our leave of Fulca; the hemisphere was all heavy with clouds, and some rain fell; we expressed apprehensions of being wet, but our landlord said we should have a very fine day; we had confidence, and it proved a clear burning day. Pass a varied country, much culture, and much waste also; A course of crops common is,

1. Fallow,
2. Rye,
3. Spelta wheat,

the soil all stoney loams; pine grounds; and broken waste. Bad, however, as the mountains are, their waste sides have a price, they sell at 72 livres the journal; that which is cultivated of it, at 240. Have no dung for improvement, and, therefore, burn the clods of a ploughing with faggots of rubbish, to prepare for rye.

Here

Here I may observe, that in above a 100 miles in Catalonia, we have seen but two houses that appeared, decidedly, to be gentlemen's, one, the governor's at Vielle, and the other in the town of Poeblar, and in the same line of country, not more than one acre probably in 200 is cultivated. Thus far, therefore, we have experienced an entire disappointment in the expectation of finding this province a garden.

In this district not one acre in an hundred cultivated, all rocks, shrubs, and weeds, with patches of wretched oats on the mountain sides. The road leads up one which is all of stone, covered with rosemary, box, brambles, &c. At the top break at once on the view of a deep vale, or rather glen, at the bottom of which, a muddy river has spoiled the little land which might have been cultivated. The hills are steep, and all is cultivated there that could be so, but the quantity very small.

Descend into a very rich vale, and to the town of Paous: cross the river Sagrèe by a most commodious ferry-boat, much better contrived and executed for carriage and horses than any I have seen in England. I have crossed the Thames, the Severn, the Trent, and other rivers, but never saw any horses forced to leap through a narrow cut in the side of the boat, but I expected them to be lamed, and have been present when others have, with the greatest difficulty, been whipt in: A carriage

riage may be driven in and out of this ferry-boat without taking off a horse, or any person moving from his seat; it crosses the river by a great rope passing against a lantern wheel, which is long enough to allow for the spreading of the river in the highest floods. Every thing now changes the features; the vale on comparison with those we have seen is wide, and also flat, and water plentifully conducted in canals, which pass every quarter, so as to be let into the field of every proprietor; having passed above 100 miles of dreary mountain, this vale, so great was the contrast, had the appearance of enchantment; the care and attention given to irrigation, cannot be exceeded. The land is prepared for it, by levelling with a nicety as curious as for making a bowling-green, and this (conducting the water excepted, which is common to every one) is the only expence: this general level is divided into oblong beds, from 6 to 8 feet wide, by little ridges of fine mould, drawn up nicely with a rake every time the ground is sown, in order that the water may not spread over too much at once, in which case the irrigation would be unequal; there would be too much of a current at the part where the water enters; a circumstance of no great importance in watering grass land, but which would be mischievous in arable; small trenches take the water from the carrier canals, and passing by the ends of those beds, the farmer opens them at pleasure

to distribute the water where wanted. As soon as the land is sown it is watered, and periodically, till the plants are up; moderately while they are young; but every day, and sometimes twice a day, when full grown: the effect is surprising, and infinitely exceeds that of the very richest manures that can be spread upon any land. The rapidity of vegetation is so great that there are but few crops, which demand all the summer for coming to perfection; I believe hemp is the only one; that plant is now 5 to 7 feet in height, and of so thick a luxuriance that nothing can be imagined finer. The rye stubbles are ploughed and sown with French beans, which are up and watered. After hemp wheat is the crop. At Paous we saw many persons winding silk, the cocoons were in warm water and wound off by a well-contrived reel, something different from those used in France.

Prices.—Bread, 3 sous, lb. of 12 oz.

| | |
|----------------|---------------------|
| Mutton, 6 sous | } the lb. of 48 oz. |
| Pork, 15 sous | |

Bottle of sweet white wine, 5 sous.

————— red, 2 sous.

Here they were threshing by driving mules around on a circular floor of earth in the open air, a girl drove three mules round, and four men attended for turning, moving away the straw and supplying the floor with corn. Their crops are all brought home by mules or asses with panniers; met
several,

several ; they each carried six great sheaves, equal to twenty common English ones ; where roads are bad, this is the only way in which it can be done.

Pass a great waste of argillaceous marle, which are strata of talc :—much of it a soft white rock, the strata in some places clear and transparent, shining, break in thin flakes ; the country for many miles waste, so that there are not more I guess than one acre in 200 cultivated.

More deserts for several miles.—Some alternate fallow husbandry between vines, and the crops so contemptible that they produce not more than the seed. Pass some vineyards surrounded on every side by deserts ; no water, and yet the vines and grapes are of the most beautiful luxuriance ; from which I conclude that immense tracts of these waste lands might be applied with equal profit if there were men and capitals enough in the country. Pass Rivellias, a village, whose white church and houses on the pinnacle of a rocky hill has a singular effect in the midst of an uncultivated dreary tract. Dine at Sanaouzier, the day excessively hot, and the flies so innumerable as to be a perfect plague, they have a clever contrivance for keeping them off the table you eat at, a moveable and very light frame of canvas is suspended from the ceiling by two pivots, and a girl keeps pulling it backwards and forwards while you are at table, the motion it gives the air drives
off

off the flies; where this invention is not adopted they use a hand-flapper for the same purpose.—Watered maiz here seven to nine feet high. Every time we see any irrigation we are struck more and more with the importance of water, even on soils which are apparently mere rock, and on the most arid desarts, it gives at once the utmost luxuriance of vegetation. Vines and olives, however, stand in no need of it, but thrive admirably on the driest soils without it: Not one acre, however, in 20, is planted with them that might be. Meet a farmer, who pointed out to us a piece of land, containing exactly a Catalonian Journal, from which, it appeared to be pretty nearly the same measure as an English acre.—They stack their corn by the threshing floor, drive mules, &c. around upon it, and draw the straw, when cleared, with ropes, by a mule to the stack, in which it is deposited for winter use. Come to more watered grounds; gardening and husbandry mixed; peaches; apples; ripe pears; pomegranates in the hedges, as large now as walnuts in the shell; onions and lettuces, in great plenty. Some watered lands have been sold at 1300 livres the Journal. To Beosca, mostly desert hills, but some broad vales, which are cultivated; about that place, many mulberrys, vines, and corn, but all the last gained by fallow. A farmer here, pays a Seigneur, who lives at Barcelona, 2000 livres a year for his farm, which is reckoned a large one.

Through all this country they collect from every waste spot, amongst their cultivated lands, shrubby wood and weeds, with which they burn heaps of clods and earth, and spread the ashes on the fallow, as a manure for corn.

There seems every where to be inclosures sufficient for ascertaining distinct properties, but not for security against any sort of cattle.—No where any wood to be seen except olives or ever-green oaks, which are almost as sad as the olive or fruit trees, altogether nothing for beauty of landscape. The hills all rocks, and the vales vines, scattered with those trees. Some new plantations of vines. —Towards Toorà the country is much more cultivated; the sides of the hills covered with olives. The vale has many mulberries, and much tillage; and for some miles past there are many scattered houses, which has not been any where the case before: at that place also we saw a new house building, which I noted as an object quite new to me. The blacksmiths burn charcoal made of pine wood, which is brought four hours off. Remarked one great improvement which was a vineyard, with vetches sown in the alternate husbandry between the rows, instead of a fallow to be followed by corn.— See two small flocks of sheep, exactly like those in the Pyrenees described the first day of this journey.

A well

A well cultivated vale—The mountains all stone. Pass Castle Frolick.—The country improves to Calaff, more cultivation and better : arrive at that town after a burning journey of forty English miles, for which we were fourteen hours on our mules.

The 15th, at four in the morn to mass, it being Sunday, the church was almost full of mulateers, who were so fervent in their devotion as to beat their breasts violently in some of the responses of the service ; how far this uncommon attention to religion is connected with the waste state of the province I leave to others to determine ; one thing which surprized me was to see great numbers of men going out of the town with their reap hooks to cut their corn, the same as on any other day ; this must be with the leave of their priests, and to give that leave argues a liberality I had not been taught to expect. Leave Calaff—Crop and a fallow ; some vetches, much cultivation, and better corn than we have in general met with ; some sown in squares as if in clusters, but could not learn the fact.—In some parts many vetches instead of fallow ; they are planted by hand, and wheat sown after. The soil a good adhesive loam, brown with a reddish hue, better than the white land which travelled with us so long yesterday : Most of the corn cut.

Great waste, and mount a hill, from whence an extensive view, all the country alike, no wood ; and

not one acre in ten cultivated. Here for the first time see Montferrat, the outline of which is interesting. Pass four or five cream-coloured bullocks, and one or two blood-coloured. I note them having seen so few in so many miles. Dine at Camp-rat—French beans 18 inches by 12, a good deal of cultivation but vast wastes, and country of a rocky, savage aspect; many pines, but poor ones. Within four hours of Montferrat vines at six feet asunder, the first we have seen planted in that manner, which shews the proprietor content with having one product only on the ground.

Wastes continue; not one acre in a hundred cultivated. All broken country, and scarcely any vales of breadth. Arrive at the foot of Montferrat, which, from the description given of it by Mr. Thicknes, was one object of our journey.

It is an isolated mountain, but of an immense basis; an admirable road is made winding up it, by which we moved for three hours to reach the convent. It is a great effort in a country that has so few roads; much of it hewn out of the live rock, in other respects it is one of the most singular in the world; on the right hand is the wall of mountain fringed with wood, at the top of which are those stupendous rocks which render it famous: to the left a precipice horrible for its depth, but all covered with plants, which in England are sought with anxiety and expence for farming shrubberies of ornament, all in
such

such luxuriance as may be expected from one of the finest climates in the world; the road so level and the wood so thick that it resembles a riding decorated for the mere object of beauty. The scenery on which you look is every where uncommon—such a confusion of shades and masses—such a tumult of forms; that the eye wanders with a sort of amazement from part to part without being able to repose in the quiet command of any distinctly.—Arrive at the convent in time for the evening hymns and music. The church is truly splendid, some of the pictures fine, and the multitude of offerings in diamonds, rubies, and all other precious stones, with the quantity of gold and silver lamps, vases, &c. &c. are objects which I shall not dwell on. On our arrival, we were conducted to a neat plain apartment in the convent, of two rooms furnished, with mere necessaries, and nothing more; and we were supplied by the servants of the convent with such food and wine as we requested, at an expence very moderate: To this useful species of hospitality, we were obliged for a comfortable night's rest.

The 16th walk up the mountain; the principal object in this little expedition was of course the great prospect that is commanded from the top, and from various of those hermitages of which Mr. Thickness has given so particular a description: I must leave it entirely in his hands, for the weather proved, all the time we were mounting and de-

scending, and, for some hours after, so cloudy, that we were enveloped in them, and could do no more than mortify ourselves with imagining the prodigious prospect which was before us without a possibility of seeing 500 yards, for the clouds were beneath as well as around us. We stopped at one of the hermitages, the inhabitant of which, a Maltese, of a most gentleman-like deportment and manners, received us most hospitably, and, with the utmost politeness, set before us bread, wine, and fruit. He lamented our ill luck, and told us that the Isle of Majorca was distinctly to be seen from his little garden, which we viewed with pleasure, but would have been better pleased to see Majorca. He had a little crop of potatoes, the roots of which came he said originally from England. All we could see, was, as we descended, the uncommon form of the rocks of which this remarkable mountain is composed. Leave the convent; take the road for Barcelona, which is on the same height as the former, but not so accompanied with vegetable decoration. Are several miles descending; the whole mountain seems to be one vast mass of pudding-stone. At the bottom we came again to olives. Meet two very fine cream-coloured oxen, which the owner says would sell for about 18 guineas, feeds them with straw, but gives oats or barley when they are worked; they are in such good order, that the straw must either be much more nourishing

nourishing than ours, or their work very light indeed. From the marks in the pine trees conjecture that they draw resin from them.

Pass Orevoteau, where a hedge of aloes about four feet high. We are now for the first time in what must be esteemed a high road, for we saw a cabriolet. Till we gained Montserrat no wheel-carriage could go the road we travelled.—A gradual descent, for some time, on a wretched stoney desert, of nothing but aromatic plants, thin and scattered with the dismal ever-green oaks, more dull and disagreeable, if possible, than the green olives. Near Esparagara, vines, at five or six feet, which cover the ground, red loam, mixed with stones. That town is the first manufacturing one we have met with, or which seemed to be animated with any other industry, than that of cultivation; the fabric is, woollen-cloths and stuffs. Spinners, earn 6 sous a day and food. Carders, 11 sous. They have also many lace-makers, who earn 9 sous a day. These are Spanish money, their sol is something higher than the French, which is our halfpenny. This town is near a mile long.

Fallows every where, yet many of the stubbles full of weeds. Corn yet in the field, and poor. Some vines promiscuous, at 4 feet. Some, in rows, at 6. Pass near Martorelle, and see the triumphal arch, built by Hannibal—it has been lately repaired, and for the lovers of antiques, too

much repaired. Here is a fine irrigated valley ; French beans, 7 feet high. Good lucerne cut 3 or 4 times a year ; onions, cabbages, lettuces ; but the hemp, every-where, a principal crop, not great. The land all formed into the beds for watering, which I have already described. In this town, every one employed in lace-making, earning 7 to 9 sous, no food ; they had, however, another employment, not quite so agreeable to the eye, that of picking the lice out of each other's heads, which numbers of them were doing ; nor could any thing be more stinking, or filthy than their persons ; or more dirty than their houses ; not a new house in the town, nor in the last.—Country disagreeable ; many beds of torrents, without a drop of water, arid, and shocking to the eye. Apricots, plumbs, melons, &c. ripe, sold in the streets, from the open ground. Pass two other small towns, where lace-making is the employment. A pair of very fine cream-coloured oxen, 24l. English : The amazement is, how they can be kept in such order in a country so arid and desert, and that has not a pound of hay in it.

Come to a noble road, making by the King of Spain, it is 50 or 60 feet wide, and walled on each side to support the earth of which it is formed : the men are paid 18 to 25 sous a day, besides, a pint of wine given, if they work well.

The

The country now is far more populous and better built: many vines and great cultivation, but with fallows. The soil all a strong red loam; a way cut through a vineyard of this soil, which shewed it to be 7 feet deep; at the bottom was a crop of fine hemp; indeed the soil to the eye was as good at bottom as on the surface.—Pass a large paper-mill. Continuing on this road, it joins another of the same size, which leads to Villa Franca. Turn to the left, over a very fine bridge, built all of red granite. It is a solid, durable, and noble work, 440 paces long, but the style of architecture bad, built 8 years ago. They have rolled their lands here, which is the first time we have seen it in Spain. Exceeding fine hemp, watered—Maiz thick and in ear—Many fine and tall poplars by the river.

Meet great numbers of carts and carriages with very fine mules, and every sign of approaching a great city.—They are now ploughing their stubbles for French beans, Their course is,

1. Hemp,

2. Wheat, and after wheat French beans.

Three crops are therefore gained in two years. The products good—Very fine mulberries—A journal, which is here also about an English acre, of rich land in the vale not watered, sells for 500 livres; watered for 1000.—They plough with mules abreast without a driver, having a line for reins as in England; the beam of the plough is long

long enough to reach to the circular iron, about 9 inches under the yoke, to which the mules are collared. The yokes are like those in which oxen are worked, only with collars instead of bows. This method, which is very common in France, also has both its advantages and disadvantages; it will be a light draught, when the pitch of the beam is proportioned to the height of the mules, but if the share must be raised or lowered according to their height, it will be bad both for the land and the animals. To have the line of traction from the draught to the body of the plough is not quite correct, but it is much better than the common plough beams made either too long or too short: in this case, the length of the beam is ascertained: but the chief origin and intention of it, is cheapness.—The mould-board of the plough here has no iron on it, and is fixed to the left side, the share is double, as if to work with a mould-board on either side, this is a great fault: Only one handle. It did its work tolerably. The wheat in sheaves is yet in the field, but the stubbles all ploughed, a narrow slip only left, on which the wheat remained: this shews good attention to the succession of crops.

Approach Barcelona: buildings many and good; numerous villas, and within 2 or 3 miles. They spread to the right and left, and are seen all over the country. The first view of the town is very fine; the situation beautiful, and the road so great and well made,

made, as to add much to the general scene ; indeed there can no where be a finer ; it is carried in an even line over all narrow vales, so that you have none of the inconveniences, which, otherwise, are the effect of hills and declivities. A few palm-trees add to the novelty of the prospect to northern eyes. The last half-mile, we were in great haste to be in time for the gates, as they are shut at nine o'clock ; we had had a most burning sun for 40 miles, were a good deal fatigued, yet forced to undergo a strict ridiculous search at the gate, as every thing pays an entr  e to government that goes into the town : When this was over, we went to the *French Crown*, but all full, then to *La Fonde*, where we found good quarters.

My friend thought this the most fatiguing day he had ever experienced ; the heat being excessive, oppressed him much. The contrast of this inn, which is a very great one, with many waiters, active, and alert, as in England ; a good supper, with some excellent Mediterranean fish, ripe peaches, good wine, the most delicious lemonade in the world, good beds, &c. &c, contrasted most powerfully with the dreadful starving or stinking fare, we had every where else met with.

The 17th, view the town, which is large, and, to the eye, in every street, remarkably populous ; many of the streets are narrow, as may be expected in an old town, but there are also many others of a
good

good breadth, and with good houses. Yet, one cannot, upon the whole, consider it as well built, except in what relates to the public edifices, which are erected in a magnificent style. There are some considerable openings, which, though not regular squares, are highly ornamental, and have a good effect in setting off the new buildings to the best advantage. One quarter of the city, called Barcelonetta, is entirely new and perfectly regular, the streets all cutting each other at right angles; it is true, the houses are all small, being meant for the residence of sailors, little shop-keepers, and artizans, but it is at the same time no inconsiderable ornament to the city, one front of this new town faces the quay. The streets are well lighted; but the dust so deep in some of them, especially the broader ones, that I know not whether they are all paved or not. The governor's house, and the new fountain, are on a scale, and in a style which shews that there are no mean ideas of embellishment here. The royal foundery for cannon is very great. The buildings spacious, and nothing wanting to shew that no expence is spared. The guns cast, are chiefly brass, they were boring several 24 pounders, which had been cast solid, and which is an operation so truly curious, that one can never view it, without paying some homage to the genius that first invented it. In time of war 300 men are employed, but at present, the number is not considerable.

siderable. The theatre is very large, and the seats on the two sides of the pit (for the center is at a lower price) extremely commodious; there are elbows to separate the places, so that you sit as in an elbow chair; we were present at the representation of a Spanish comedy, and an Italian opera after it, and were surprized to find clergymen in their habits in every part of the house.—This, which is never seen in France, shews a relaxation in points of religion, that may by and by have its effect. They have an Italian opera twice a week, and plays the other evenings. I saw a blacksmith, hot from the anvil, come in, and seat himself in the pit, with his shirt-sleeves tucked above his elbows. The house is larger than ours at Covent-Garden. Every well-dressed person was in the French fashion; but there were many others, that still retained the Spanish mode of wearing their hair, without powder, in a thick black net, which hangs down the back; nothing can have a worse effect, or be, in idea, more offensive in so hot a climate. But the object at Barcelona, which is the most striking, and which has hardly any where a rival, is the quay; the design and execution are equally good; it is about half a mile long, as I guessed by my eye. A low plat-form is built, but a few feet above the level of the water, of stone, close to which the ships are moored; this is of breadth sufficient for goods and packages of all sorts in loading and unloading.

ing

ing the vessels; a row of arched warehouses open on this plat-form, above and over which is the upper part of the quay, which is on a level with the street; and, for the convenience of going up or down from one to the other, there are ways for carriages, and also staircases: the whole is most solidly erected in hewn stone, and finished in a manner that shews a true spirit of magnificence, in this most useful sort of public works. It does credit to the kingdom. The road by which we travelled for several miles to Barcelona, the bridge which we passed the river, and this quay, are all works which will reflect a lasting honour on the present king of Spain. They are truly great. There are now about 140 ships in the harbour, but the number is often many more.

The manufactories at Barcelona, are considerable. There is every appearance as you walk the streets of great and active industry; you move nowhere without hearing the creak of stocking-engines. Silk is manufactured into stockings, handkerchiefs, (but these are not on so great a scale as at Valencia) laces, and various stuffs. They have also some woollen fabricks, but not considerable. The great business of the place is, that of commission; there are not many ships belonging to the town, but the amount of the trade transacted here, is very considerable.

The

The industry and trade, however, which have taken root and prospered in this city, have withstood the continued system of the court to deal severely with the whole province of Catalonia. The famous efforts which the Catalans made, in the beginning of this century, to place a Prince of the house of Austria upon the throne of Spain, were not soon forgotten by the Princes of the House of Bourbon. Heavy taxes are paid in Barcelona; nothing comes into the town without paying an *entrée*; a load of 220 bottles of wine, pays 12 *pesettos*, which is about 12s. English: even wheat is not exempted. Houses pay a heavy proportional tax, which is levied with such strictness, that the least addition or improvement is sure to be attended with an increase of the tax. Nor is taxation the only instance of severity, the whole province continues to this day disarmed, so that a nobleman cannot wear a sword, unless privileged to do it by grace, or office; and this goes so far, that they are known, in order to be able to exhibit this mark of distinction, to get themselves enrolled as familiars of the inquisition, an office which carries with it that licence. I note this correctly, as the information was given me; but I hope the person who gave it was mistaken, and that no such double dishonour is in question; in a court to drive men fourscore years after their offence, and which offence was only fidelity to the Prince they esteemed their sovereign

sovereign—to so unworthy a means of personal distinction. The mention of the inquisition, made us enquire into the present state of that *holy* office, and we were informed, that it was now formidable only to persons very notorious in ill fame; and that when it does act against offenders, an inquisitor comes from Madrid to conduct the process: from the expressions, however, which were used, and the instances given, it appeared that they take cognizance of cases not at all connected with faith in religion; and that if men or women were guilty of vices, which made them notoriously offensive, this was the power which interposed: an account by no means favourable, for the circumstance which was supposed most to limit their power, was the explicit nature of the offence, that it was against the catholic faith, and by no means against public morals, to secure which, is an object of very different judicatures in every country.

There are reckoned to be from 1200 to 1500 monks and nuns in the city.

Price of Provisions.

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| Bread, 4 sous and a fraction, | } that of the poor people, very little less; but they buy the soldier's bread, which comes cheaper; they live very much on stock-fish, &c. |
| per lb. of 12 oz. | |
| Mutton, $22\frac{1}{2}$ sous, the lb. of | |
| 36 oz. | |
| Pork, 45 sous, the lb. of 12 | } comes cheaper; they live very much on stock-fish, &c. |
| oz. | |

Hams,

Hams sometimes three or four pesettos or shillings the lb. of 12 oz. wine four to five sous the bottle.

The markets are now full of ripe figs, peaches, melons, and more common sorts of fruit, in great profusion. I bought three large peaches for a penny, and our laquais de place said that I gave too much, and paid like a foreigner. Noble orange trees are in the gardens in the town full of fruit: and all sorts of garden vegetables in the greatest plenty and perfection. The climate in winter may be conjectured from their having green pease every month in the year.

Labour. Common day wages are 25 sous *French*, sometimes rise to 33 sous, the very lowest 22½. Stocking weavers earn 33 sous:

View the very pretty fort to the south of the town, which is on the summit of a hill that commands a vast prospect by sea and land. It is exceedingly well built, and well kept. Notwithstanding this fort to the south, and a citadel to the north, of the town, corsairs, in time of war, have cut fishing vessels out of the roads, and very near the shore.

The 18th leave Barcelona, searched again at the gate going out, which seems for the payment of entries to be a needless and burthenome precaution; Enter immediately an extraordinary scene of watered cultivation, and which must have given the general reputation to the province. Nothing can well be finer.—The crops in perpetual succession—and

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the attention given to their culture great. Not the idea of a fallow ; but the moment one crop is off, some other immediately sown. A great deal of lucerne, which is cut four, five, six, and even seven times in a year ; all broadcast and exceedingly thick and fine, from $2\frac{1}{2}$ to 3 feet high when cut. It is all watered every eight days. We meet many mule loads of it going into the town, each 450lb. or $4\frac{1}{2}$ quintals, which sells for four pezzos or near 4s. English ; suppose it 4s. for 500lb. it will not be difficult to calculate the produce of an acre. All I saw would yield ten ton green per acre at each cutting, and much of it a great deal more ; let us suppose five cuttings or 50 tons per acre, at 16s. a ton, this is 40l. sterling per acre. It is to be remembered that the growth we saw was the third, perhaps the fourth, and that the first and second are in all probability more considerable, it will not, therefore, be thought any exaggeration to calculate on five such. I by no means assert that lucerne yields always, or generally so, as I speak only of what I see. I have very little doubt, however, but this is the amount of that portion which is thus cut and sold to Barcelona, possibly one-third, certainly one-fourth is to be deducted for the expence of carriage ; this is the most difficult part of the calculation, for it depends on how many times the mule goes in a day, which must also depend on the readiness of sale and other circumstances. The
profit

profit is, however, amazingly great. All the other lucerne I have any where seen sinks, in my idea, to nothing, on comparison with the vast and luxuriant burthens given by these watered grounds. The finest crops I have known in England are drilled; but there is a fallacy to the eye in the drilled crops in proportion to the distance of the rows; they appear thick while they are really thin; but in broadcast ones, which satisfy the eye, there is no deception, and these immense burthens, through which the scythe is with difficulty moved, produce more at one cutting than two-feet drills would at three; with the advantage of the herbage being finer and softer. But weeds in England and Catalonia are two very different things; it well deserves, however, with us, a better trial than it has yet generally received; I have viewed broadcast crops in that country, particularly Rocque's, on a very rich garden soil, and Dr. Tanner's on a common turnip loam, which, though not to be named with the Spanish, were certainly encouraging.

Hemp, through all these watered lands, is the predominate crop, it is 7 feet high and perfectly fine, some of it is already harvested. I am sorry to see that the watered part of the vale is not more than a mile broad. Indian fig, called here, *figua de maura*, grows 6 or 7 feet high, very branching and crooked, the arms at bottom as thick as the thigh of a common man; these and many aloes in the

hedges. Every garden or farm has a small house, with a reservoir for water, which is filled in most by a water wheel, with jars around the circumference. The gardens between Barcelona and the fort, and also within the walls, are watered in the same manner; the water is let into every little bed, in the same way as I have already described. They are crowded with crops and kept in most beautiful order: those in and close to the town scattered with mulberry trees. But in the district of which I am speaking at present, among the hemp and lucerne, neither vine, olive, nor mulberry.—These watered lands belong generally to proprietors who live in Barcelona, and are let at 30 to 40 Spanish livres the journal.

The valley in its widest part is three miles broad. Here it lets at 34 Spanish livres a year the journal, and the journal sells from 600 to 1000 livres, each of these livres being about 54 sous: (1000 Spanish livres make 2700 French ones.) Taking the medium or 800, and the French livre at $10\frac{1}{2}$, this makes the price of a journal 90l. 2s. 6d. and the rent of it 4l. The gross rent of the land, therefore, pays nearly $4\frac{1}{2}$ per cent. but whether this is clear rent, the tenant paying all taxes, and doing the small repairs of his house, &c. or whether there are deductions on those accounts, are questions which were neither forgotten nor resolved. To shew the quick succession of their crops, they have corn in
stooks

stooks on the borders of some of the fields, and the land ploughed and sown with millet, which is already 9 inches high.—Many bleaching grounds.

Advancing—the irrigated land lets from 24 to 40 Spanish livres; that not irrigated at 15. Water, therefore, here, more than doubles the rent of the land, and in other places we have found the difference yet greater. The soil all the way a red and brown deep friable loam, with a sufficient adhesion for any crops.—They sow French beans after hemp, and then sow wheat.—At Ballalo, two hours from Barcelona we meet with the first vineyards, but the hills here come down to the sea; and where they do not, the vale is not more than half a mile wide. Lycium in the hedges; some few mulberries. Oranges in the gardens; a few palm trees with vines around them. Cream-coloured oxen in carts, their horns sawn off to the length of 6 inches two yoked abreast, and one mule before. A pair of good oxen sell at 25*l.* English. Vale from a quarter to half a mile broad.

All the corn in the country is left in the field till it is threshed, and they say it never takes hurt. A hill cut thro' 30 feet deep for the road, and walled on each side. The sea close to us on the right; all the way; and the vale I speak of, is between that and the hills—some of them are sandy and planted with vines, which yield, per journal, four charges, the

charge felling at 13 or 14 pesettos, and a journal for 300 Spanish livres; this is the journal, felling for 35l. 8s. 9d. and producing about 2l. 14s. very inadequate to the value of the land; there are great quantities of fruit trees of all sorts. A journal of watered hemp, produces from 10 to 12 quintals; if not watered, the product much inferior; the price 14 to 17 Sp. livres the quintal, or 35s. English, which makes 19l. 5s. an acre. This is, however, to be understood of a very fine acre. The mountains are at half a mile and one mile distant, and partly cultivated to the top. All here inclosed, and the men mending gaps in their hedges. The appearance of industry on this coast, is as great as it can be; great numbers of fishing boats and nets, with rows of good white houses on the sea-side; and while the men are active in their fisheries, the women are equally busy in making lace. Dine at Gremah; after which, a vale for a mile and half, or two miles, the soil sand; and much cultivation. On the hills many vines. Some corn without fallows; it is all cut, but not carried, and the land all ploughed—vines. Many large villages and scattered houses all the way. Pass Meliasa, a fishing town; they salt great quantities for Barcelona; their nets are very great. Houses all the way. Wherever an opening is in the mountains, more distant ones are seen, and still higher; a circumstance, which unites with the vast view from Montserrat, and

and shews that all behind is mountainous, and that the vales are no where large.

A wheat stubble ploughed up, and the land sown with buck-wheat, which is now up.

Part of a vale highly cultivated, but a great part waste, though on the same level to the eye, but much spoiled by a torrent, for a quarter mile broad; it is entirely ruined, yet there is no water now, nor any channel, all being level; in such cases as these, and indeed in most others, industry, united with good capitals, would remedy the evil. Eight men working a sandy field, by way of digging with an instrument very common here, a sort of hoe 16 inches long, and 9 broad, with a handle so short, that the body is bent very much in using it. Vale two or three miles broad, and unites with an opening in the mountains. French beans often under maiz, but that crop much thinner, and nothing gotten by it. Some very fine orange-trees, near 20 feet high, large stems, and thick round umbrageous heads. All this vale before Maturò, is under a very fine cultivation. They have much lucerne; and an article of attention I had not before observed, was, tubs made on purpose for carrying the riddance of privies and urine to their fields.

Maturò is a large town, well-built, white and clean houses, the streets crossing one another at right angles: It appears exceedingly industrious; some stocking-frames; lace-makers at every door. The

houses have all one large door, which serves for both door and window to that room, a circumstance, which shews what the climate must be. I am sorry to add, that here also, the industry of catching lice in each other's heads is well understood.

Hemp yields ten quintals the journal. Vineyards give three, four, and five charges of wine per journal, and sell for two, or 300 Spanish livres the journal: Other lands, not irrigated, 100 to 150 livres.—For above a league, sand and vines, very little other cultivation; the vale is two miles broad, the soil sand and fine gravel; sells at 150 livres, Spanish, the journal; on the hills, and near the sea vines, mountains cultivated, imperfectly, almost to the top; but there is much waste.—Houses scattered every where.

Pas Arrengs, a large town, where ship-building seems a business of some consequence; making thread lace universal here; they have thread from France; women earn ten to sixteen sous at it. Great industry, and in consequence a flourishing appearance.—Canet, another large town, employed also in ship-building, fishing, and making lace. All these towns are well built; the houses white, clean, and very good, with an equal appearance of general industry, and its right concomitant, private comfort. Every scrap of flat land about them well watered from wells and reservoirs; the hills covered with vines. Land near Canet, well watered, sells
for

for 500 Spanish livres the journal; vineyards for 300. They give, in good years, to 12 charges. Unwatered land 100 to 150. The cultivators are Metayers, that is, they pay a portion of the crop instead of rent: the produce is divided into three parts; two for the farmer, and one for the landlord, in which case the farmer is at every expence whatever. Some vineyards are let at from 15 to 40 pesettos; I have not met any where in France with vineyards let at all; for they are all in the hands of the proprietors. Land in general lets from 15 to 35 livres. To Calielli, a large town like the former, full of industry; here we find an inn no better than in the mountains, yet we are now in the high road from Paris to Madrid; a stinking dirty dreadful hole, without any thing to eat or drink, but for mulateers.

The 19th, leave it, enter a flat vale, half a mile broad, not watered. Hemp, very poor; maiz, 7 feet high. Vineyards, under regular plantations of olives; corn cut, in stooks, and the land ploughed. A journal sells for 200 livres, and further on, where irrigated, for 1000, which is an astonishing difference. Pass Penether, a large town, not a league from Calielli: vale three quarters of a mile broad; mountains are not high, and are under vines or wood. Come to a great cultivated vale, but no water, or but little; maiz, 6 inches to 2 feet high, in squares, on land from which the
corn

corn has been cleared ; the account we got from our guide, imperfect ; said to be sown when ploughed ; I suspect the highest to be previously sown in a bed, and transplanted as soon as the land was ready to receive it ;—millet also after corn—the soil a rich black loam.

Pafs Malgra, which is not so well built as the other towns, but much lace made in it. Vale two or three miles broad : vines and cultivation. A great deal of fine maiz, called, all over Catalonia, Meliac. I found the same name for it afterwards, in Languedoc, where they speak the same language as the Catalans. Lets for 15 livres one with another. Maiz is sown grain by grain after corn ; the soil a granite sand.

The road here turns from the sea into a thick woodland, all inclosed. Pomegranates make very fine thick hedges, much wood and vines—no watering nor fallows — houses scattered every where—soil sandy, but good. Old castles on the hills all the way, to defend the coast against the Africans. Very bad ploughing—cream-coloured oxen. Inclosures become still thicker. Poplars planted over some fields, and vines trained to them, and from one to another : reading accounts of this husbandry in books, I had formed an idea, that it must be singularly beautiful to see festoons of vines hanging from tree to tree, but there is nothing either pleasing or striking in it, and the wine is never
good

good for want of sun, and owing to its being dripped on by another plant, which robs it also of its nourishment; corn is sown under them, which is damaged still more. Broad flat vale, formed of the ruins of granite. Pyrenees now in front, and very high mountains, with their heads in the clouds, to the left. Cross a river, which has damaged the country very much.

Pass for several miles in a vale, where the country has different features. It is all inclosed—much oak—a few vines, trained up trees. Soil bad. Two poor bits of meadow I noted, for they were the first I had seen bad in Spain. Many fields over-run with spontaneous rubbish. Maiz and harricots cultivated here together, as in many other quarters. Some scattered houses. Much waste on gentle hills that have vineyards on them, and would all yield that production, if planted. A sloping hill of granite sand, well cultivated. Vines, trained to oak and poplars, with many fruit trees. The price of wheat here, is 15 or 16 pesettos, which I repeat, is not so much as a shilling (but I have no authorities to turn to for ascertaining how much: the man who writes on a journey must not be expected to write with authorities around him) for the $3\frac{1}{2}$ quarterons, weighing $5\frac{1}{2}$ quarters, and each quarter 26lb.; this is 143lb. of wheat, costing $15\frac{1}{2}$ pesettos, which will be 50 p. the English quarter. Barley, half the price.

Come

Come to a great waste, spreading over many hills, for several miles; to northern eyes, a most extraordinary scene. It is a thicket of aromatic and beautiful flowering shrubs, with very little mixture of any that are common with us. Large spreading myrtles, 3 or 4 feet high, and covered with their sweet-scented flowers, jessamins, bays, and other shrubs, with which we crowd our shrubberies. The plants, on an acre of this waste, would sell in England for enough to buy many acres of the best watered land in Catalonia; they are here worse nuisances than heath with us, for we saw neither sheep, nor goats. View after this, a large plain, bounded by mountains, and scattered every where with houses—a good deal of cultivated inclosure. But, on entering, find much waste in this plain. Vines now form hedges, and surround the fields. Come now to cattle, of which we have hitherto seen very little; saw several small flocks of sheep, most of them entirely black, some without horns, others with, and curling round the ears. All the oxen cream-coloured; except two, with the necks and end of their tails black; all well-made, and in fine order. Large breadth of corn, and some fields left apparently to grass. I suspect, fallows.

The country still thickly inclosed, some pieces of grass, and a few of meadow, which are not burned, hot as the climate is. More cattle here than we
have

have yet seen. They keep their sheep and hogs (all black) together, and the girls, &c. who attend them spin hemp. Pass Goronota, and many wastes for some miles on gentle slopes, the soil good, but covered with aromatic shrubs, no cattle seen in any of them.—Level vale with much culture and much pasture: many large oaks in old double banks, also tall poplars: all inclosed, and like many parts of England, as maiz and vines are not here; a thick woodland. In this part the soil is a deep, rich, brown, adhesive loam: the corn not carried, but the land ploughed and sown with French beans. They have pease, beans, maiz, hemp, &c. without watering, and, that circumstance considered, the crops are good. The ploughs are drawn by cream-coloured oxen, guided by a line and without a driver. Some meadows without water, with many quails. They are metayers, paying the landlord one third of the produce; but not of phang, which is for oxen; phang is their name for clover, and this the first time we met with any information about it. It puzzled us much to discover, what phang could be; but I found, by accident, a plant of *trifolium alpestre*, and shewing it to a farmer, found, by his description, that it was clover, (*trifolium pratense*) beyond all doubt. They were now ploughing a wheat stubble, in order to sow it directly with phang. Their culture of it is singular, and very good; it is mown or hay once in the spring, yielding a fine crop; the

land

land directly ploughed, and planted with *monget*, which is their name for fallow hoeing crops, such as French beans, millet, pease, &c. This *monget* is kept very clean, and wheat sown after it, which is off soon enough for a second crop of French beans. A course with them, is,

1. Maiz.
2. Wheat, and sown after with clover.
3. Clover and French beans.
4. Hemp and French beans.
5. Wheat and millet.

Vines are here planted in espaliers, small poles are laid on pegs driven into posts, which stand at six or eight feet asunder, and the vines trained to them; corn is sown between the rows; good land, yet waste join it.—Many hedges are planted with the yellow-blossomed prickly acacia, which answers perfectly well for that purpose.—Within four miles of Gerona, husbandry continues good. Trees have vines trained to them. Much cattle, mules, horses, sheep, and hogs kept in the stubbles: fine cream-coloured oxen in the ploughs. The soil fine deep reddish loam.—Now reaping a crop of square pease, three feet high, stout as lupins, with pods like that plant: all here an inclosed woodland.—Hemp, six feet high, and not watered.—To the left of Gerona, mountain beyond mountain, branches of the Pyrenees, and very high: but seemingly a good deal of cultivation on them.—Fine rich deep soil in
the

the vale before Gerona ; the same husbandry—crops of corn very fine, not carried, though all the land quite green with young millet ; this extreme confidence in the climate shews clearly what it must be.

Gerona is an old town, walled and fortified, with some redoubts, and a fort on the hill above it, but not kept up ; it would not stop an army for half an hour. It looks well at a distance, but is ill built. Has a cathedral, and a bishop, who gave us his blessing, as we passed him in his coach and six mules. They have no manufactures of any consequence, and no resource but the rich vale, and what it can get from passengers to and from France ; yet it has many Castilian workmen, who come hither for employment, having none at home ; French also come hither for the same purpose. A journal of the vale land, sells for 200 Spanish livres, or 23l. 12s. 6d. and lets, at 8 to 10, that is, 1l. 1s. English ; but none of it is irrigated. The bishop's revenue is 24,000 French livres ; they have Curès with 1200 of the same livres, and even so high, as 3000. They do not tithe either lambs or other live stock.

Price of Provisions.

Bread, 3 sous, 12 oz. lb. and excellent.

Beef, 10 sous, } but they have no mutton, or beef,
Mutton, 6 sous, } except what comes from France.

Pork, 8 sous, of 16 oz.

Cheese,

Cheefe, 20 fous, 12 oz.

The poor live cheaply on vegetables, and a little pork : their labour 20 fous, a day.

The 20th, leave Gerona, snow on the Pyrenees here, as well as at Bagnere de Luchon. Fine maiz, planted thin, with good cabbages under it, this is a system, which promises well ; but cabbages here, are only for the people, and not for cattle. Three measures and a half make a journal; and a pair of oxen plough three measures a day, buy their oxen in the French mountains, at a year old. Their hills are either wood, or cultivation, but mixed with part rocky waste. Cross some hills, which contain a great deal of waste, but see a broad valley to the right, all inclosed, and well cultivated, to the eye rich ; houses scattered. At Marenia, iron, 4 or 5 fous the lb. of 16 oz. The road leads up a hill ; 20 or 30 women winding it, by levelling earth ; on enquiry, find it is done by the communities, and that they earn nothing, hence it is by *corvées*. Enter a wood of cork-trees, many of them barked half way up. The texture of this tree is remarkable ; it seems formed of layers of bark, one under another. A small flock of sheep, that give 5 or 6 lb. of wool each.

We are in the great road from France to Spain, and yet no such thing as posting, only wretched one-mule chaises, which seem 200 years old, they go like
like

like a cart in the ruts, and the driver walks by the side to drive the mule. Yet they are as dear as a post-chaise in England; travelling all day on horseback, in the great heats, disagreeing with my friend, he enquired after one at Gerona, in case he should have found it necessary; they had none then, but said, the price was 15 pesettos to Figuera.

The country now generally cultivated; the fields ploughed, but have had a crop. Some well-planted olives, ploughed under. All the corn we see is wheat; as to barley, it was cut and threshed the first week in June, and the land ploughed and sown with something else. From Gerona to Caldeorrles, $3\frac{1}{2}$ hours, generally cultivated; but wastes scattered, and mountains every where in sight. This as innumerable as ever, and girls with flappers at the inns. The course here, is,

1. Barley, left to weeds, &c. for cattle.
2. Wheat and millet, or French beans.
3. Oats or barley, and maiz for cattle.

No fallow, or phang. French beans are called Phafols. Leaving Caldeorrles, the country all cultivated, many olives, and under them vines; all well inclosed, no waste. Pass Bascrà, a torrent has here destroyed a vale half a mile broad; pass it by a ferry. Country now neither so rich nor so well cultivated as on the other side of that town. Maiz planted at six feet, and two rows; french beans in the intervals, olives scattered, but the maiz very

poor under them. Country more poor and stoney, yet but few wastes. Olives and many tall pines.—Wastes with pines; the sea two miles to the right, and the ridge of mountains in the front seems to end abruptly at it.—Many vineyards, and planted with olives; all under culture; and well inclosed with acacia hedges; several with ditches to them.

The vale of Figuera bounded finely by the mountains; many olives and vines, and a good deal of corn, but neither soil nor cultivation equal to what we have passed; the former is more of a stone brash. Reach Figuera, whose inhabitants seem industrious and active, they make lace, cordage, and mats, and have many potteries of a common sort. But the buildings are not so new, white, or clean, as in the places on the sea-coast.

The 21st, left Figueras, and breakfasted at Jonquieras. Enter the bottom of the mountains very soon; pass through many olive grounds; the trees are large, and stand about 16 feet asunder, soil good red loam, but stoney; no watering. A quart of oil, 2½ lb. at 12 oz. sells, retail, for a pesetto. Olives bear only every other year. Our guide says, he knows a tree, in Aragon, which yields from 50 to 80 lb. for a crop. Several small sheep-folds. In these 12 miles to Jonquieras, vines scattered all the way on the hills; some few olives;—many cork-trees, latterly:—much cultivation, but a good deal

deal waste also. French beans in rows, and ploughed between with oxen. Soil all the way a granite sand : The road, generally, very bad. The town dirty, and no industry, but in smuggling. Come to a most noble road, which the king of Spain is making ; he began at the pillars that mark the boundaries of the two monarchies, joining it with the French one, it is admirably executed ; but it will be many years before it will be carried quite to Barcelona. The workmen are paid one pesetto and three sous a day. Take leave of Spain, and here re-enter France.

O B S E R V A T I O N S.

That remark, which must precede all other, and which must long ere now have forced itself on the mind of the reader, is the deficiency of the information. Travelling in Catalonia is not travelling in England ; neither attention nor expence were spared, to procure a guide, who could speak both French and the Catalan dialect of the Spanish ; the man we had was strongly recommended, but, on experience, it was found, that his knowledge of the French was very much confined to the Languedocian dialect, which is common through all the south of France, and resembles more the Catalan than the French : When niceties, or any thing dubious, was the question, this circumstance

threw us at a loss, and convinced me, that it was impossible to have too much caution in registering information, which came through a questionable channel. Such confessions as these are very uncommon among travellers, from which I conclude, that they have all been masters of the languages of the countries they travelled through—this has not been my case ; and as I did not possess the advantages of fortune, which could in a moment remove such obstructions, I hope the candid reader will reflect on the situation, before he condemns the deficiencies which flowed from it.

At the same time, I hope this candour will not be so far mistaken, as to induce any one to imagine, that the circumstance vitiates the information which I have noted ; an eye, inquisitive to know the relations of the objects which it sees, when aided by a knowledge not altogether novel on similar enquiries, is not easily deceived, upon points which come within its cognizance. When enquiries were not satisfied, questions were not omitted, but, if the replies were doubtful—if there was the least apprehension that the circumstances were dubious, no minutes were made : and this will be sufficient, I hope, to apologize for particulars being noted sometimes, without the circumstances, which would have rendered them complete. Whatever is noted affirmatively may be relied on, and we met, some-
times

times, with persons, whose conversation was liable to no such objection.

The first leading feature of the minutes, is the immense quantity of mountains, and other wastes, which are found in every part of Catalonia. We travelled about 340 miles through the province, and may conclude, from what we saw, without any danger of being deceived, that not 1 acre in 100 is under any sort of cultivation; in such gross calculation, one would take care to be within the truth, and if I said, not one in 150, I believe I should still be on the safe side of the assertion. When this fact is connected with the reputation which the province has of being next to Valentia, the best cultivated, and, without exception, the most industrious in Spain, conclusions very unfavourable to the state and policy of that monarchy must necessarily be drawn by every reader. The advantage of possessing the second city of the kingdom, a place of great trade, and containing 120,000 souls, is very considerable, and must have done much, to bring the province even to its present situation. At the same time that these boundless wastes were offending the eye, in every quarter, we could, in no part of Catalonia, condemn the people for want of industry; on the contrary, they seem very well to merit the character they have gained: the activity which is seen through all the towns upon the coast, and they are very numerous

and very populous, can hardly be greater, in a country submitted to numerous festival days, by its religion : the fishery, in all those places, is considerable, and attended to with an unabating spirit ; the women and children make lace, and wherever the soil is good, or water conducted, cultivation, is in a high state of perfection. Even in the interior country, we saw, every where, signs of much industry, and, amidst a poverty which hurt our feelings, we generally saw something to convince us, that it was not the fault of the poor people, that greater exertions were not made. Those interior parts depend entirely on their agriculture, and the height to which they climb the mountains, in order to find a spot tolerably level for cultivation, shews that their minds and bodies are ready for laborious exertions, whenever there is a prospect of enjoying the reward. With so much industry among the people, to what are we to attribute the waste state of their country ? The enquiries necessary for a complete investigation of such a question, were not to be made by travellers ; a longer residence would have been necessary ; but a few circumstances should be mentioned, which are, probably, connected intimately with it.

First, the poverty of the people in the interior country is striking ; their towns old, ill-built, dirty, and wretched : the people ill-dressed and generally deficient in the wealth best adapted to such a country,

try, cattle; in the higher Pyrenees this is not so much the case; they have cattle, and are in every respect in a better condition, owing to the plenty which great commons give in a country of good pasturage, and where wood is in profusion. The number of sheep we saw in general was not the twentieth part of what the wastes, bad as they are, for that animal would maintain; and that of goats so small, as to indicate the same thing strongly. This poverty, not being the effect of a want of industry, must result from a government inattentive to their interests, and, probably, oppressive, and from a total want of the higher classes residing amongst them. Till we came to the rich country near Barcelona, that is to say, in about 200 miles, we saw nothing that had the least resemblance to a gentleman's country seat; those who have estates let in it are absent, those we heard of live at Barcelona, and the whole country is thus abandoned to the very lowest classes, and the wealth and intelligence, which might contribute to its improvement diverted into distant and very different channels; this is a great misfortune to the people, and which will long contribute to keep things in their present state. To the same cause it is owing, that the roads, so essential in the improvement of a country, are left in a state which precludes the use of wheel carriages, which, with the unnavigable state of all the rivers, except for rafters of timber grossly

put together, cuts off that system of reciprocal purchase and sale, that interior commerce which is the best a country can possess. These are also evils which the residence of men of fortune is the most likely to correct; and much above the power of peasants and mountaineers. With all these disadvantages, there are still circumstances which make it surprising that more land is not cultivated. Vines and olives succeed very well on the poorest and the most arid soils. Their growth and luxuriance in spots surrounded on every side with wastes, and in soils not better, yield a conviction which leaves nothing to doubt, that the adjoining lands, would, if planted, give a similar produce. The profit of doing it will not be suspected, if the revenue and value of cultivated lands, on comparison with wastes, be considered. Two points here, force themselves on our notice; first, the want of capitals for undertaking the work, and, secondly, the wastes being in all probability in the possession of absent landlords, who will not give sufficient encouragement to others to do, what they neglect doing themselves.

Where cultivation climbs up the mountain sides, it is by small proprietors, who purchase of the communities of the parishes, the property of the land; wherever the soil is in hands that will sell just the portion which is in the power of a man to buy, great exertions are sure to be the consequence.

There

There is no spur to industry so great as the possession of a piece of land, which, in a country where the means of subsistence are contracted for want of more diffusive and more various employments, is the only comfortable dependence of a man, who wishes to be the father of a family. The parish that will sell a waste, at a moderate price, will be almost sure to see it cultivated; but the great lord, who rarely, or never, sells any of his property, unless ruin forces him to sell the whole, is equally sure of perpetuating the desarts, which are the disgrace of his country. He would let them, and, perhaps, upon advantageous terms; but it demands considerable capitals, and a very enlightened state of agriculture, for speculations of that sort to take place; the only capitals, which can be found in Catalonia, for such a purpose, are the hands of men willing to work; aided, perhaps, by some little savings, which have originated from the view of wastes, that are to be purchased. All that has been done, and it is much in some districts, is to be traced clearly to this origin.

That these observations are just, will be confirmed, by the prices of all the necessaries of life in that province; they have nothing very cheap; every article of consumption is somewhat dearer than in France; and it is more than once noted, that all the meat they eat, comes from that kingdom. Their mules are bred in France, and great imports

imports of cattle and sheep are common. This is a direct premium upon every species of rural industry, and its not having operated greater improvements, must be owing to the causes on which I have touched.

But if the mountainous and waste parts of the province present so unfavourable a prospect, the watered districts are, on the contrary, scenes of most exuberant fertility. To a person, from the north of Europe, there can hardly be a more striking spectacle, than the effect of watering in these southern climates; it converts an arid stoney waste, which would yield nothing but vines and olives, and on which every sort of grain would hardly return the seed, at once, into fields pregnant with the richest harvests; on such soils, it gives almost the whole value of the land; and on the richest, it raises it, at the least, double; and, in some instances, five times. It enables the cultivator to have a succession of crops, more important than any thing we know in the north. The reaping one crop is but the signal, for immediately putting in another, in doing which, they exert themselves with the utmost activity; ploughing, universally, as soon as the corn is cut, and are, by this means, enabled to have constantly, two crops a year. The extreme fertility of these lands, has, however, led many travellers into great or ignorant exaggerations; they have asserted, that the land yields many crops at the same

same time, one under another, which is both true and false. It is fact, that corn, wine, oil, and silk, are produced by the same field, in some few instances; but it is not from hence to be concluded, that the goodness of the land, or the importance of irrigation, is at all shewn by that circumstance. The fact is, that it is impossible to raise one crop under another, without losing in one, nearly as much as you gain in the other; the olive, being a large tree, cultivation may be carried on under it, but the crop gained, is poor, and shews, that exactly in proportion to the shade, is the injury sustained, by the produce which is shaded. If the trees are thick, the corn is hardly worth reaping; it is the same in other cases, and I was well convinced, from viewing their grounds, with this design, that the soil can carry, profitably, but one crop at a time; several may be crowded on it, but nothing is gained; with grass under trees, this is not the case so much in a hot climate; but even grass is damaged, and it is not the question, at present, as they have none. A country to be supported, and in a hot climate, without meadows or pastures, sounds very strange to English ears, and it is among the curious circumstances of this, and, I am told, of the rest of Spain. If they applied to grass the land that is proper for it, they could not possibly have bread to eat; straw here is given instead of hay, and entirely supplies its place, and the oxen
and

and mules, which we saw, did not shew in the least, by their looks, any deficiency in nourishment. Lucerne is not at all common through the interior part of the province, and where they cultivate it, it is used green. Maiz is sometimes sown merely for its herbage, as it might be, I believe, profitably in England, late in the spring, to avoid our frosts ; it is one of the most nourishing plants in the world.

The consequence of water being so apparent in the province, I could not but attend particularly to their exertions in conducting it, and I concluded, that not one acre in 20, perhaps in 40, is watered, that might be. In the flat vales, where canals of irrigation are made, at a small expence, a very good, though by no means a complete, use is made of them, but on the declivities of the mountains, it is necessary to erect a mound of solid masonry across a river, and to cut the canal partly out of rocks, and to support it by walls of stone, as I have seen in France ; and having thus diverted a large portion of the water of a river, to carry it on its level, along the side of the mountain, as far as it will go ; such exertions demand a much greater capital, than is to be found upon the lands of Catalonia : It could be done only by a great lord, who knew the importance of such undertakings, who resided on his estate, and whose income was spent in something else than the taste
and

and pleasures of a capital. But leaving such exertions to individuals, who either have not the money, or not the will to employ it, is to perpetuate waste. It is the king of Spain, only, who can make those efforts; a monarch, who should be determined to improve his kingdom, would presently find the means of doing it. The importance of water is so well known, that if a canal is made to conduct it, the proprietors, or farmers of the lands, below it, would readily, and speedily, make use of it, paying, proportionably, for the quantity they took; this is the system in Lombardy, and the effect is great; it would be the same in Catalonia, but the capital, for the great work of the canal, it would probably be necessary to supply by the king, if not the whole, at least a considerable portion; and such money should be lent to undertakers, at a moderate interest. Exertions of such a nature, with a proper general attention given to such objects, would make them fashionable among the great lords of the kingdom, and fertile provinces would soon be created out of barren and desolate wastes. Arbitrary power has been exerted for ages, in efforts of barbarity, ignorance, and tyranny; it is time to see it employed in works, that have the good of mankind for their aim. A beginnnig, and a very good one, is made in the construction of some great roads, on a scale of true magnificence, which is never exhibited with such effect, as in works of
public

public utility ; and whenever the importance of cultivation is well understood in Spain, and the right means of advancing it clearly analyzed, irrigation will then receive an attention that has not, hitherto, been given. Such is the necessity of water, for various productions in this climate, that rivers ought to be no more than infinitely multiplied channels, and collected in one stream only, as a reservoir for fresh, and repeated deviations.

To cultivate their wastes, and to spread irrigation wherever it is possible to carry it, are the two first objects in Catalonian improvement, all others are inferior; they have, however, some which ought not to be neglected. Their wine and oil are objects of the greatest importance, for it is by these, probably, that all the lower wastes should be improved, which are not capable of irrigation; to improve the manufacture of these two articles, in such a manner as to increase the demand for them, would be one great means of accelerating the cultivation wanted; they are both bad, the wine is thick, muddy, and poisoned by the borachio, and the oil is generally rancid; both would otherwise be excellent; to remedy these defects, and force those commodities, by their merit, into commerce, would tend powerfully to enrich the province; and to enrich it in the very best method, by one, which would, at every step, accelerate its improvement. Wool is another commodity, which is of considerable

able value, and might be produced in an infinitely greater quantity than at present. In travelling over the lower mountains, after quitting the higher Pyrenees *, the deficiency of sheep struck me very much; the climate is too dry to think of a luxuriant vegetation of grapes; but if the rosemary, lavender, and other aromatic useless plants were destroyed, and the land, by cultivation, properly adapted, was to be laid down to such plants as would feed sheep, fine pastures might not be gained, but much valuable sheep-walk would be created, and the quantity of wool increased an hundred fold. Such a system would unite well with olives, which might be thinly scattered over such improvements: To import immense quantities of sheep from France and to take no steps to increase them at home, is but a blind conduct, especially when it is considered that in a proper system they cannot be increased, without being at the same time the means of improving fresh land.

The reader will not expect from a traveller, who throws his ideas on paper amidst the movements of a journey, that correct attention which leaves nothing untouched; I attempt no more than to

* There is no line of boundary to be fixed, with any precision, to the Pyrenees; I am inclined to think, that all the mountains we saw, Montserrat, perhaps, excepted, are branches of that stupendous chain, uniting in some direction. The whole mountainous part of the province, that is, 13-twentieths of it, is, properly, the Pyrenees.

glance at some prominent features, and to delineate them roughly; to draw into one point of view, the conclusions which ought to be the object of all useful travels, it would be necessary to see much more, to reside longer, and to travel with greater advantages than I possess. This little journey has been very far from affording such materials, but it has not to me been barren; it has removed many false ideas from my mind, which the writings of men, who have either been inattentive to, or ignorant of agriculture, had placed there, relative to this province; and I know better how to approach the praises, or condemnation, which are given of this or other countries, in similar climates. One word more, and I conclude:—There are many persons who travel, for enjoying the beauty of prospect—and there are others, who seek for a residence better adapted than their own, to their health or their fortune, to such I will add a few words.

To the taste of a man that is fond of a country in a northern climate, there are few objects more pleasing to the eye, or more refreshing to the imagination, than the natural landscape scenes of a well-cultivated and well-peopled country. These have, in England, features that charm and instruct. Inequalities of country, not too abrupt, woods that present rich masses of shade, rivers that offer the contrast of their silver bosoms, gliding gently through vales of constant verdure, which are
neither

neither hurt by their rapidity, nor rendered marshy by their sluggishness; inclosures, which mark the value and the culture of the soil; and scattered habitations of the poor, clean and comfortable, mixed with the houses of farmers, in a state of ease and prosperity; and with the seats of gentlemen, who find society and liberal pleasures, without deserting the fields, which give them their support, for the profusion and taste of a capital.—No philosophical eye can view such a scene without pleasure, nor contemplate it without instruction: Such a scene is not to be met with in Catalonia; the latitude which spreads over their heads, a clear expanse of blue, which lightens up in their heavens a blazing sun, with rays of which we have no feelings, which bids the perfumes of the East breathe over their wastes, and gives to their gardens a profusion of the most delicious fruits;—forbids it. Infinitely the greater part of the province is rock or mountain, without verdure, and without other wood than evergreen oaks, olives, or pines; and no where, except in the Pyrenees, with any masses of shade that give effect to the prospect. The only verdure in the country tolerably durable, is that of the vineyards. Great wastes are covered with shrubs, which, however beautiful, when detached, have very little effect in a general prospect. To look for neat cottages, or good farm houses, is to look in vain; and to find the landlords of the country,

you must go to Barcelona and Madrid. The deficiency of verdure destroys half the idea of rural beauty ; the eye, dazzled with the unvarying splendor of the solar beams, and tired with wandering over arid heaths, aches for cooler and more quiet scenes, and languishes to repose on the verdant mead. The vale hath not these to give.--When watered, where alone there could be verdure, all is a crowded scene of trees, and corn and hemp : of glorious fertility, but forming the good feature of a landscape, only when looked down upon from an eminence immediately above it. Hence I own, that in respect of beauty of prospect, I must prefer many parts of France, and more in England, infinitely to any thing I saw in Catalonia, a country whose most striking features are its rocks,

I take the climate to be equal to any thing that is known in the world, I was there in the hottest season of the year, and travelling 12 and 14 hours a day, yet bore it without any any such oppression as could give an idea of its ever being insupportable, and both men and women stood their field business through the day, except two hours, which they take for repose. Supposing, however, that July and August are esteemed much too hot, still the rest of the year must, from every circumstance we heard, be delicious—they spoke with rapture of the pleasantness of the month of May ; and no doubt but the winter must be a charming season,

season, where such vegetables as green-pease are gathered through every month of it, from the open fields. In regard to wholesomeness for invalids, one circumstance should be considered, which may be applied equally to all watered arable lands; I should conceive, that they must of necessity in so hot a climate be very unwholesome; and little better than rice-grounds, which are known every where to be pestiferous. The land is kept constantly watered, it is, therefore, little better than an earth sponge, or mass of mud; innumerable fibres of vegetables are mixed with it, the heat, the moisture, and the rich soil form a putrid fermentation, which gives health and luxuriance to vegetables, but must fill the air with phlogistic effluvia, I should apprehend far from wholesome to the human body. This is a consideration for physicians, and for those whom they send to southern climates.

I T I N E R A R Y.

English Miles.

| | | | |
|---------------------------------|---|---|------|
| Bagnere de Luchon to Vielle | — | — | 26 |
| Scullo | — | — | 32 |
| Pœblar | — | — | 36 |
| Fulca | — | — | 28 |
| Calati | — | — | 40 |
| Montserrat | — | — | 27 |
| Barcelona and the Mountains | — | — | 40 |
| Caliella | — | — | 36 |
| Gerona | — | — | 36 |
| Figueras | — | — | 26 |
| Bellegard, the boundary between | | | } 20 |
| France and Spain, | — | — | |

A COUP D'OEIL ON THE PRESENT
SITUATION OF EUROPE.

By the Editor.

THE readers of this work will not, I hope, consider the subject of this sketch as unconnected with agriculture; for if a war should arise, I doubt we shall too soon feel how intimately concerned the landed interest of this kingdom is in general, and every farmer in particular, in so fatal an event.

The anxiety which at present ferments in Europe from Petersburg to Lisbon, and from the Hellespont to the Thames is almost without example. The origin of it is in theory, as unequal to the effect as could be wished for by any essayist on *great events from litile causes*; but it draws a consequence that promises to render wars perpetual. It belongs not to my purpose to analyze the negotiations in Holland: That the court of France should be keenly piqued at the conduct of the Statholder in the last war, which they assert, rendered ineffective the operations of the Dutch legislature in their favour; and that the court of England should have in equal detestation, that of the city of Amsterdam in the same quarrel, is as natural a feeling on both sides as can well be imagined.

But

But that such derangements in one period, are to produce new wars in another, is a gross absurdity; equally ridiculous and pernicious to the real interest of every party, immediately or relatively concerned in it. Yet this may prove the origin of kindling a war that shall spread over the whole world, without supposing the flame that has burst forth on the Euxine to be derived from it. Should the madness of the two kingdoms come to such a pitch, more money will be torn from the useful pursuits of industry than all the seven provinces are worth; and more lives lost in the dispute, than exist men and frogs in the whole Dutch republic.

One leading consideration ought to be equally forceable with England, France, and Prussia. While a quarrel is kindled, which shall plunge them into a total dereliction of their real interests, there are other powers who are steadily pursuing theirs. The west of Europe engaged in a bloody war, would leave to Austria and Russia the most inviting opportunity to divide the Turkish empire, and make an acquisition of power terrible to all their neighbours. This is too obvious to be overlooked. I have more than once made this observation, and attempted to shew, that the general interests of Europe demand a strict alliance between France and England, as the only probable means of preserving the peace and the ballance of Europe. The treaty of commerce was one excellent

cellent step: whatever events cross the progress which ought to be made towards such an alliance, are truly to be regretted, since the increase of power in the North will, sooner or later, render it necessary and inevitable.

The interests of the King of Prussia are such, that every word that can be said in relation to England and the House of Bourbon is much more conclusive when applied to him. The position which the amazing genius of his predecessor had so happily arranged is only to be preserved, by steadily adhering to the same principles; and events, as they arise, must be brought as much as possible to render them constant and effective. It remains yet to be proved, how far the present appearances are to be made to correspond with so necessary and leading an idea.

Should the Northern powers make great acquisitions in Turkey, and every one agrees in the extreme probability of the event, it may be attended with consequences very far from being obvious at present. To render them masters of the Black Sea, of the Hellespont, and the Archipelago; to throw into their hands some of the richest and most fertile provinces in Europe, to establish them fully in the Mediterranean—can the House of Bourbon for one moment permit the paltry affairs of Holland to rival in their attention such objects as these? and by what possible means are such menacing advances

vances to be prevented or guarded against but by a strict and confidential alliance with England and Prussia for the great and salutary purpose of preserving to every potentate in Europe his dominions in the present situation? that is to say, by an alliance with those identical powers with whom the present preposterous disputes threaten to kindle hostility and endless warfare.

But if such arrangements are too complex and too difficult to be established; how are those powers, which have so long acted the first part in the great theatre of European politics, to support their wonted figure, but by the steadiest and most enlightened attention to all the arts of peace: while the Northern potentates seek by bloodshed and conquest addition to empires already too large to be well administered: Let England, France, and Spain, lay on surer grounds the foundation of their future importance; not by vain and frivolous additions beyond their present territories, but by giving the most fostering attention to their great basis and support of all power, their AGRICULTURE; by improving their manufactures, and by giving to their commerce all it wants—freedom. By regulating their finances to the perfect ease of the farmer, by protecting the lower classes, and animating every species of industry that can improve and enrich their dominions. England has not so much in such a career to perform as France and Spain

Spain, but she has much. Her territory and natural resources are so much smaller that she ought to be the more active in improving them to the utmost; spreading cultivation over her enormous wastes, and in carrying it every where to the highest pitch of which it is capable. These are the true objects for the attention of these powers, and the plan which can alone give them the resources that may render them respectable in the next age. These are the arts they ought to cultivate, and not the paltry intrigues of Dutch politics.—Peace and the prosperity of their kingdoms.—Let them amass, with the avidity of misers, the ease, the liberty, and the happiness of their subjects, and they will lay foundations of real power deep and secure—the balance between the East and West of Europe will be preserved, and no potentate be great enough to break the peace of the world with impunity. Peace, therefore, ought on every consideration to be the object with these powers: let us examine for a moment their present means of ensuring it.

What has been the visionary purpose of France? To acquire Holland for a future ally, free from all internal shackles that might impede her operations. If this could be purchased at the expence of embassies and intrigues; the prospect to shallow politicians was inviting; but by men who look deeper than into the surface of things, that conclusion would not be drawn.

drawn. Such would consider the natural situation of a king of France, as infinitely superior to the little adventitious, and intriguing benefits to be derived in idea from such an aid : I have no doubt of this ground; but I delineate a sketch, and shall not involve the enquiry in details. But the present question, is a war : will you waste the men, the money, the industry and happiness of your people for such an end ? What an opportunity is chosen for such a conduct.—The finances of the kingdom are so far from being recovered from past evils, that an enormous deficiency at a peace establishment to an unknown amount, hangs with a dead weight on the vital vigour of the state : the operations to remove it, are but in experiment, and the utmost efforts of sweeping retrenchments leave a doubt of bringing the receipt and the lowest scale of expence to a ballance : *Parliaments* banished for their firmness, and re-called for their instability *, good taxes proposed by the court, and bad ones accepted by the people—form altogether a mass of contradictions, which peace may reconcile, but which a war must involve in tenfold confusion. If

* They were banished for their steady adherence to the principle that the States-General of the kingdom were alone competent to grant taxes ; and they were recalled, on agreeing to register an edict for laying taxes.—I need not observe, that when the principles of freedom are in question, the prolongation of a tax legally at an end, or laying a new one, are exactly the same thing.

the provincial assemblies, which are now meeting in that kingdom, are suffered by peace to carry the proposed ameliorations into effect, the agriculture, manufactures, and commerce of it will thrive, and the revenue will be improved without violence; but if the distresses of a war are thrown upon them to combat with, every good effect may be lost, and the institution itself fall to decay, even in the first moments of its existence. With a debt too great to pay the interest, without a vast deficiency, what insatiation short of frenzy can paint the support of a faction in Holland, as a prize to play for at the expence of a war! I do not touch upon good or bad success in it; in truth, the difference between those extremes is not so great as many are apt to imagine, for the most brilliant victories, and the most ruinous defeats, end nearly, while purchased, as they must be by either party, in the same distress and weakness.

With regard to England; the absurdity of hazarding a war is, if possible, still greater; the vast and stable resources of France at the last extremity, and amidst bankruptcy and ruin, would still enable her to exist with a comparative possession of power; but, in a country like ours, where the artificial wealth bear so enormous a disproportion to the real, the most penetrating politician cannot venture to calculate the event: to meet a war is, upon the most moderate calculation, to add another hundred millions

millions to our debt. Suppose the nation able to the last extremity to bear such a burthen, what infinite distress and utter ruin must be the consequence to many classes of the State! what, upon the best system of taxation, supposing it pursued, would become of all country gentlemen with small or moderate estates? is it necessary to tell them that they would be compleatly annihilated? those of 23, and 400l. a year are sunk under our taxes as they stand at present: another war will sweep away, with equal certainty; of 5, 6, or 700l. do our farmers conceive they are to escape? We have seen the line so long sacred, passed, and taxes laid upon them; the gloomy eye of the Financier rolling with baleful vigilance in search of new ways and means, will let neither his crops nor his domestic comforts escape. Agriculture will not long survive, or if it does exist, it will be the invidious spectacle of great Lords and their devouring stewards on one hand, and a miserable dependent peasantry on the other. If it is said that the situation of France tempts a war, it is only saying that you hope success—suppose the greatest to be imagined—suppose more sugar islands acquired in one hemisphere, and richer fields, to fatten Nabobs, in another; are these compensations to the country gentlemen for the loss of their estates?—for those who are at present in their coaches, to see their sons in another age on the coach box, and their daughters the

waiting

waiting-maids of the great? Would the bonfires and illumination of towns heal the wounds which poverty inflicts upon the country? of what difference to me when I pay the malt and beer duty to be told, that it produced victories and the acquisition of Canada in 60; and when I pay for my horses, house, and windows, that they produced defeats and the loss of America in 80;—victory and defeat, conquest and loss end exactly the same—in taxation.—Will the debility of France pay us for the miseries of England? Will the madness of our neighbours convert our folly into sense? Let the landed interest reflect on these events, and then ask themselves what can happen in Holland to reimburse the mischiefs of such a situation?

A. Y.

A N N A L S
O F
A G R I C U L T U R E.

COMPARATIVE CALENDAR OF FLORA,
FOR THE YEARS 1755 AND 1785, AT
STRATTON IN NORFOLK, AND
TROSTON IN SUFFOLK.

To the Editor.

S I R,

THOUGH *Ceres* and *Pan* have an undisputed pre-eminence in the ANNALS OF AGRICULTURE, yet *Pomona* shares in your attention, and even *Flora* has claims to your regard. At this time of leisure and suspense, when the waning year looks back on the recent harvest, and forward to the impending winter, it may not be untimely to mark the indications of the seasons; of which the continued notice may, in a course of years, give

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Y

that

that degree of certainty to rural operations, which as yet is scarcely suspected to be attainable.

With this view, I have extracted some parts which either referred specifically to the same objects with those of my own Register, or which were otherwise apparently suitable to the design, from STILLINGFLEET'S CALENDAR OF FLORA, taken in 1755; to which I have added, throughout, *Memo-randa* of my own of a *thirty* years later period.— I have one much larger and more perfect of the present year: but, perhaps, even this which I now send, is more prolix than may be acceptable.

It will easily be seen, that the *Calendar* of Mr. STILLINGFLEET is composed chiefly of plants growing in the fields and groves; the other almost entirely of plants growing in the garden; though a great part of them indigenous to this island, or at least so naturalized, as to grow no less freely than if they were. The advantages on both sides are remarked by that agreeable and discerning writer. I have only farther to observe, that as the latitude differs little of the two places, the soil and other circumstances appear in general to correspond: the country about *Stratton* being described a dead flat: on one side a barren black heath; on the other a light sandy loam, partly tilled, partly pasture land: the situation of this village however, is, probably, much less sheltered than that of *Stratton*.

The

The variously coloured and double flowers it is well known fall not as distinct species under the contemplation of the *Botanist*: yet there is almost always some difference, and in many a regular one, connected with these circumstances in respect to the time of flowering: so that to the *Meteorologist* they may be of some use. And even as they suggest pleasing ideas to the mind, almost all men are in some degree *Florists*, so far at least as not to take exceptions at this little indulgence to the fancy; and, perhaps, from the face of vegetable nature being so wonderfully animated and engaging, with all the diversity of lively hues, elegant forms, and agreeable odours, a much more important purpose is answered than the mere entertainment of the imagination. Results spring from hence, alike favourable to *Agriculture* and to human society, in its innumerable *aspects*.

I am, Sir, with true esteem,

Your obedient servant,

Troston-Hall, Sept. 23,
1787.

CAPEL LOFFT.

References in the STRATTON CALENDAR explained.

l. signifies Leaves beginning to open.

L. Leaves fully opened.

f. Flowers beginning to open.

F. Flowers full blown.

Fr. R. Fruit ripe.

In the TROSTON CALENDAR,

Names of Flowers without any mark, are to be understood of Flowers in blossom. † This mark signifies the Renewal of blossom of the same plants within the year. § Denotes uncertainty as to the day of flowering.

STILLINGFLEET.

AT STRATTON, IN NORFOLK.

Latitude 52° . $45'$.*Reviving Nature seem again to breathe.*

[For the Comparative TROSTON CALENDAR, See page 298.]

J A N U A R Y 1755.

- 5. Rosemary, 515. H.
- 11. Honeyfuckle, 458. *Lonicera periclymenum*.
- 23. Holly, 466. *Ilex aquifolium*.
- 26. Galanthus Snowdrop, 1144.

F E B R U A R Y.

- 4. *Alauda arborea* cantat; *Woodlark* sings.
- 12. *Rooks*, *Corvus frugilegus*, begin to pair.
- 22. *Hazel Tree*; *Corylus avellana*, F.
- 25. *Gooseberry Bush*; *Ribes grossularia*, 1484. 1.

M A R C H.

- 4. *Thrush*, *Turdus musicus*, sings.
- 5. *Dove*, *Ring*, *Columba palumbus*, cooes.
- 11. *Bees*, *Apis mellifera*, out of the hive.
- 28. *Violet*, sweet, 364. 2. *Viola odorata*, F.
- 29. *Primula veris*, *Primrose*, 284. 1. F.

A P R I L.

- 6. *Amygdalus Persica*, L and F. 1515. *Peach*.
- 10. *Anemone nemorosa*, 259. *Wood Anemone*.
- 3. *Bramble*,

STHILLINGFLEET.

3. Bramble, 467. 1. *Rubus fruticosus*, L.
9. *Nightingale*, *Motacilla luscini*, sings.
18. *Viola canina*, 364. 3. Dog Violet.
Oak; *Quercus robur*, 440. 1. L and F.
21. Walnut Tree, 438. *Juglans regia*, L.
27. *Lilac*; *Syringa vulgaris*, 1763. *Lilac*.
28. *Jasminum officinale*, 1.
Cratægus oxyacantha, 453. 3. Thorn, white, f.

MAY.

3. *Convallaria Majalis*.
4. Rattle, Yellow; *Rhinanthus crista Galli*, F.
284. 1.
10. *Cratægus oxycantha*.
11. *Rosa*.
12. *Berberis*.
Æsculus hippocastanum.
20. *Viola odora*.
21. *Rye*, *Secale hybernum*, 288, in ear.
25. *Columbines*, *Aquileg. vulg.* 173. 1. F. in the
woods.
30. Cuckow flower; *Lychnis flos cuculi*, F. 338.

*The undermentioned from the UPSAL CALENDAR
of BERGHER, for 1755.*

Latitude 59°. 51' $\frac{1}{2}$.

MAY.

1. *Polyanthus*, 1083. *Primula hortensis*.
- Y 3
3. Wood

3. Wood Anemone, 259. 1. *Anemone nemorosa*, Violet, sweet, 364. 8. *Viola odorata*.
9. *Stork* and *Swallow* return.
Filberd; *Corylus avellana*, L. 439.
12. *Cuckow*, *Cuculus canorus*, sings.
13. *Birch Tree*, 443. *Betula alba*, L.
Barberry Bush, 465. *Berberis vulgaris*, L.
14. Spindle Tree, 468. *Enonymus Europæus*, L.
Orange, mock, 1763. *Philadelphus*, L.
Elder, water, 460. *Viburnum Opulus*.
Lilac, 1763. *Syringa vulgaris*, L.
Privet, 463. *Ligustrum vulgare*, L.

STILLINGFLEET.

M A Y.

31. Spurrey; *Spergula arvensis*, F. 351. 7.
Alder berry bearing; *Rhamnus frangula*, F. 465.

BERGER'S CALENDAR *continued*.

M A Y.

14. Buck-thorn, sea, 445. *Hippophæe rhamnoides*, L.
15. Daffodil, wild English, 371. 1. *Narcissus pseudo-Roses*, garden.
Elm Tree, 469. *Ulmus campestris*, L.
Nightingale, *Motacilla lusciniæ*, returns.
Thorn, white, 453. 3. *Cratægus oxycantha*, L.
Apple Tree, 451. *Pyrus malus*, L.

Primrose,

BERGER.

- Primrose, 284. *Primula veris*.
 Cherry Tree, 463. *Prunus cerasus*, L.
 Thorn, Buck; *Rhamnus Catharticus*, L.
 16. Beam Tree, white, 453. *Cratægus Aria*, L.
 Chesnut Tree, horse, 1683. *Æsculus hippocastanum*, L.
 Beech Tree, 439. *Fagus sylvatica*, L.
 Hornbeam, 451. *Carpinus Betulus*, L.
 Poplar, black, 446. *Populus nigra*, L.
 Poplar, Asp, 446. *Populus tremula*, L.
 Marygold, Marsh, 272. *Caltha palustris*.
Fly, Dragon; Libellula.
 Oak Tree, 440. *Quercus robur*, L.
 24. *Ash Tree**, 469. *Fraxinus excelsior*, L.

STILLINGFLEET.

JUNE.

2. *Viburnum Opulus*; Elder, water, F. 460. 1.
 Flowerde Luce, the water; *Iris pseudacorus*, F.
 5. Horse Radish; *Cochlearia armorac*. F. 301. 1.
 Thorn Evergreen; *Mespilus pyracantha*, F.
 6. *Rose, Dog*; *Rosa canina*, 454. 1. F.
 Bugloss, vipers; *Echium vulgare*, F.
 7. Poppy, wild, 308. 1. *Papaver somnif*. F.
 8. Pondweed, narrow-leav'd, 145. 9. *Polyg. amphib*. F.

* When the Ash is in leaf † there is scarcely any more Frost.

† This I suppose the meaning: to which I have a little varied the expression. C L.

9. Eyebright, 284. 1. *Euphrasia officin.* F.
Heath, fine leav'd, 471. 3. *Erica cinerea*, F.
12. Meadow, sweet; *Spiræa ulmaria*, 259. 1. f.
Scabious, field; *Scabiosa arvensis*, 191. 1. F.
13. Willow Herb, gr. hairy, 311. 2. *Epilobium*
hirsutum, F.
15. Wood-bind, 458. 1, 2. *Lonicera periclymenum*, f.
Nightshade, woody; *Solanum dulcamara*,
265. F.

BERGER'S CALENDAR, *continued.*

M A Y.

25. Jack by the hedge, 293. *Erysimum alliaria*.
27. Crane's Bill, 361. 18. *Geranium sylvaticum*.
Globe Flower, 272. *Trollius Europæus*.
28. Thorn, black, 462. *Prunus spinosa*.
Cherry Tree, 463. *Prunus cerasus*.
30. Lilly in the Valley, 264. *Convallaria Majalis*.
Butterwort, 281. *Pinguicula vulgaris*.
Grass, cotton, 435. *Eriophoron polystachyon*,
forte polystichon.
Germander, wild, 282. 11. *Veronica chamæ-*
drys.

STILLINGFLEET.

J U N E.

17. Agrimonia Eupatorium, 202. Agrimony.
18. Yarrow, 183. *Achillea millefolium*.
21. Orache, wild, 154. 1. *Chenopodium album*, F.
21. *Solstice*.

STILLINGFLEET.

21. *Solstice*. About this time *Rooks* come not to their Nests at Night.

Wheat, 386. 1. *Triticum hybernum*, F.

Rye, 388. 1. *Secale hybernum*, F.

Self-heal, 238. *Prunella vulgaris*, f.

Parsley, hedge, 219. 4. *Tordylium anthriscus*, f.

22. Horehound, base; *Stachys Germanica*, F. 239.
St. John's Wort; *Hypericum perforatum*,
342. F.

Parship, 206. 1. *Pastinaca sativa*, F.

Mullein, white, 287. *Verbascum thapsus*, F.

23. Larkspur; *Delphinium Ajacis*.
Marygold, corn; *Chrysanthemum segetum*, F.
182. 1.

25. Vine; *Vitis vinifera*, 1613. F.
Bindweed, great, 275. 2. *Convolv. arvensis*, F.
Feverfew; *Matricaria parthenium*, F.
Woad, wild, 266. 2. *Reseda luteola*, F.
Wheat, 386. 1. *Triticum hybernum*, F.

28. Oats, manur'd, 389. *Avena sativa*, F.
Barley, 388. *Hordeum vulgare*, F.
Blue Bottles, 198. *Centaurea cyanus*, F.
Knapweed, gr, 198. *Centaurea scabiosa*.

The groves, the fields, the meadows now no more
With melody resound. 'Tis silence all,
As if the lovely songsters, overwhelm'd
By Nature's bounteous plenty, lay intrans'd
In drowsy lethargy.

I heard

I heard no birds after the end of this month, except the *Stone Curlew*, *Charadrias Oedichenemus*, whistling late at night; the *Yellow Hammer*, *Emberiza flava*; the *Goldfinch*, and *Golden crested Wren*, now and then chirping. I omitted to note down when the Cuckow left off singing; but, as well as I remember, it was about this time.—*Aristotle* says, that the bird disappears about the rising of the dog-star; that is, towards the latter end of *July*.

STILLINGFLEET.

JULY.

2. Calathian Violet. 274. *Gentiana pneumonanthe*, F.
 4. Silver-weed, 256. 5. *Potentilla anserina*.
 6. Lavender; *Lavendula officinalis*, F. 512.
 7. Pinks, maiden, 235. 1. *Dianthus Deltoides*, F.
 8. Tansey; *Tanacetum vulgare*, 188. 1. f.
Bed-straw, lady's, 224. *Galium verum*, F.
Sage, wood, 245. *Teucrium scorodonia*, F.
Spinach, 162. *Spinacia oleracea*, F.
Angelica, wild, 208. 2. *Angelica sylvestris*.
 11. *Jasminum officinale*.
Solanum Tuberosum.
Lilium candidum.
 18. *Lythrum falicaria*.
Rest-harrow, 322. *Ononis spinosa*.
Hyssop, 516. *Hyssopus officinalis*, F.
18. Potatoes,

STILLINGFLEET.

18. Potatoes, 615. 14. *Solanum tuberosum*, F.
Lilly, white, 1109. *Lilium candidum*, F.
13. *Lime Tree*, 473. *Tilia Europæa*, F.
Willow herb; *Lythrum salicaria*, F. 367. 1.
20. *Lilium reflexum*; Martagon, 1112.
Orpine, 269. *Sedum telephium*.
22. Penny-royal, 235. *Mentha pulegium*, F.
Laurustinus, 1690. *Viburnum Tinus*, f.
24. Amaranth, 202. *Amaranthus caudatus*, F.
28. Mint, water, 233. 6. *Mentha palustris*, F.
Burdock, 192. *Arctium lappa*, f.
Saxifrage, burnet, 213. 1, 2. *Pimpinella*.
Devil's Bit, 191. 3. *Scabiosa succisa*, F.
30. Nightshade, common; *Solanum nigrum*, F.
Dove, Ring, Columba palumbus, cooes.

AUGUST.

Pour'd from the villages, a numerous train
Now spreads o'er all the fields. In form'd array
The Reapers move, nor shrink from heat or toil,
By emulation urg'd. Others, dispers'd,
Or bind in sheaves, or load or guide the wain
That tinkles as it passes. Far behind
Old Age and Infancy, with careful hand,
Pick up each straggling ear.

1. Melilot, 331. 1. *Trifolium officinale*, F.
Rue, 874. 1. *Ruta graveolens*.
Bed-straw, lady's, wh. *Galium palustre*, F.
224. 2.

5. Tansey.

5. Tansey, 188. 1. Tanacetum vulgare, F.
 9. Mint, red; Mentha gentilis, F. 232. 5.
 Wormwood; Abfinthium vulgare, F.
 12. Lycopus Europæus, 236. 1.
 Thistle, Lady's; Carduus Marianus, 195.
 12. F.
 14. Clary, wild; Salvia verbenaca, 237. 1. F.
 26. *Robin red breast*, Motacilla rubecula, fings.

S E P T E M B E R.

2. Clematis vitalba, 258. Traveller's Joy.
 5. Grass of Parnassus. 355. Parnassia palustris.
 Ivy, 459. Hedera helix, f.
 14. Leaves of the Sycamore birch, lime, elm,
 mountain ash, begin to change.
 16. Furze, 475. Ulex Europæus, F.
Chaffinch, Fringilla cælebs, chirps.
 21. *Swallows* gone.
 23. Autumnal Equinox.
 25. *Wood Lark*, Alauda arborea, fings.
Field Fare, Turdus pilaris, appears.
 Leaves of the Plane, tawny; of the Hasel,
 yellow; of the Oak, yellowish green; of
 the Sycamore, dirty brown; of the Maple,
 pale yellow; of the Ash, fine lemon; of
 the Elm, orange; of the Hawthorn, tawny
 yellow; of the Cherry, red; of the Horn-
 beam, bright yellow; of the Willow, still
 hoary.
 27. *Blackbird* fings.

STILLINGFLEET.

29. *Thrush*, *Turdus musicus*, sings.

OCTOBER.

1. Barberry, 465. *Berberis vulgaris*, Fr. R.

2. *Crow*, *Royston*, *Corvus cornix*, returns.

6. Leaves of *Ash*, almost all off; of *Chestnut*, yellow; of *Birch*, gold colour.

7. Wind high; *Rooks* sport and dash about as in play, and repair their nests.

9. *Spindle Tree*, 468. 1. *Euonymus Europæus*, Fr. R.

Some *Ash Trees* quite stripped of their leaves.

Leaves of *Marsh Elder*, of a beautiful red, or rather, pink colour.

14. A great *Mist* and perfect *Calm*; not so much as a leaf falls. *Spiders' Webs* innumerable appear every where. *Woodlark* sings. *Rooks* do not stir, but sit quietly at their nest trees.

16. *Geese, wild*, *Anas anser*, leave the fens, and go to the rye lands.

22. *Woodcock*, *Scolopax rusticola*, returns.

Some *Ash Trees* still green.

24. *Lark, Sky*, *Alauda arvensis*, sings.

Honeyfuckle, 458. 1, 2. *Lonicera periclym.*

—————Now from the North

Of *Norumbega*, and the *Samoeid* shore,

Bursting their brazen dungeons, arm'd with ice,

And snow, and hail, and stormy gust, and flaw,

Boreas and *Cæcias*, and *Argestes* loud,

And *Thrafcias*, rend the woods, and seas upturn.

AT TROSTON, IN SUFFOLK.

Latitude 52°. 30'.

| MILLER. | COMMON. | LINNÆUS | |
|--|------------------------------------|---------|---|
| JANUARY 1785. | | | |
| 21. 1. <i>Helleborus Hyemalis</i> | Winter Aconite | 702. 1. | |
| 22. 2. <i>Vinca minor</i> folio ex arg. vario | Silver-striped Periwinkle, fin. | 293. 1. | |
| 3. Daphne, Mezerion | Mezerion | 480. 1. | |
| 31. 4. Primula | Primrose | 197. 1. | Cl. V. Ord. 1. <i>Pentandria</i> Monogynia. |
| FEBRUARY. | | | |
| 12. 5. <i>Galanthus</i> | Snowdrop | 397. | |
| 14. 6. <i>Hepatica flore pleno</i> ce- ruleo | Double blue Hepatica | 694. | <i>Anemone</i> Hepatica. |
| 7. § <i>Crocus</i> | | 55. b. | Cl. III. Ord. 1. <i>Triandria</i> Monogynia. |
| MARCH. | | | |
| 11. 8. <i>Hepatica fl. cærul.</i> simpl. | | | |

Cl. IV. Ord. 1.
Tetrandria Monogynia.

| | | |
|--------------------------------------|--------------------------|----------|
| 28. 9. Crocus purpur. | Purple | |
| 10. Alb. purp. varieg. | White var. w. purp. | |
| 11. Cornus | Cornelian Cherry | |
| APRIL. | | |
| 12. Hepatica rubra | Double red Hepatica | 694. 1. |
| 13. fl. pleno | | |
| 14. Narcissus | Narcissus | 399. |
| 15. § Perficula nectarea | Nectarine | |
| 16. Flos Adonis | Flos Adonis | |
| 16. 17. Anemone | Anemone | 694. |
| 18. Hyacinthus | Hyacinth | 423. 6. |
| 21. 19. Erythronium album | White Dog's Tooth Violet | 410. 1. |
| 22. 20. Pulmonaria officin. maculata | Spotted Lungwort | 184. 2. |
| 21. Viola Martia | White, or March Violet | 1007. 9. |

In this *Calendar LINNÆUS* is quoted according to the *Numbers* annexed to the *Genera and Species* in the 3d Vol. of his *SYSTEMA NATURÆ*. Vnde boniæ, 1770. Where the Title of the Plant is added in a Parenthesis to the Names of MILLER, it marks the distinction between the old Folio editions, and the Quarto of 1771, improved according to the *Linnean Arrangement*.

22. Corona

| MILLER. | COMMON. | LINNÆUS |
|--------------------------------|--------------------------|----------|
| 22. Corona Imp. (Fritillaria) | Crown Imperial, red | 407. 1. |
| 25. Narcissus juncifolius | Jonquil | 399. 11. |
| 24. Narcissus flore pleno | Orange Phoenix Narcissus | |
| 26. Ceraso Prunus | Cherry Plum | 407. 5. |
| 27. Fritillaria Meleagris | Fritillaria | 620. 7. |
| 28. 27. § Armeniaca | Apricot | 197. 1. |
| 29. Paralyfis fl. pleno | Oxlip with double flower | |
| 30. Persica nana fl. pleno | Double fl. Peach, dw. | |
| 30. Amygdalus pumila | Dwarf Almond | 619. 4. |
| 31. Anemone sylvestris | Wood Anemone | 694. 10. |
| 1. 32. Pervinca minor fl. albo | Periwinkle dw. white fl. | 293. 1. |
| 33. Muscari racemosum | Grape Hyacinth | 423. 11. |
| 3. 34. Caltha palustris | Marsh Marygold | 703. 1. |
| 7. 35. Tulipa sylvestr. | Wild Yellow Tulip | 411. 1. |

MAY.

| | | |
|------------------------------------|-------------------------|---------|
| 8. 36. Adonis ann. | Flos Adonis | 698. |
| 8. 37. Tulipa picta | Garden Tulip | |
| 38. Lonicera alpigena | Sc. Syringa, or red fly | 232. 8. |
| 9. 39. Cytisus repens | Honeyfuckle | |
| 12. 40. Caltha palustris fl. pleno | Double Marsh Marygold | 703. |
| 13. 41. Bellis varia flore pleno | Garden Daisy | 962. |
| 42. Statice | Thrift | 384. 1. |
| 43. Lonicera periclymenum | Early Honeyfuckle | 232. |
| 14. 44. Syringa Persica | Persian Lilac | 22. 2. |
| 45. Mespilus Virgin. | Cockspur Hawthorn | 622. 4. |
| 46. Æsculus | Horse Chestnut | 457. 1. |
| 16. 47. Fothergilla * | | |
| 18. 48. Polemonium cær. | Greek Valerian | 216. 1. |
| 19. 49. Symphyt. orient. | Oriental Comfrey | |
| 50. Mespilus pyrac. | Pyracantha | 625. 2. |
| 51. Iris major violacea | Pale Violet col. Iris | 59. |

Cl. VI. Ord. 1.
Heptandria Monogynia.

* This elegant Plant, which I since unfortunately lost by an accident, flowered with me Aug. 25, 1784: it belongs, I think, to the *Monœcia Polyandria*; and may, perhaps, properly be referred to the *FAGUS Castanea*.

| MILLER. | COMMON. | LINNÆUS |
|------------------------------------|---------------------------|----------|
| 20. 52. Trollius Asiat. | Siberian Globe Ranunculus | 700. 2. |
| 53. Perficca nana fl. pleno | | |
| 21. 54. Rosa | | 631. |
| 55. Aquilegia | Columbine | 684. |
| 56. Pæonia | Peony | 678. |
| 24. 57. Lycium sinense | Chinese Box-thorn | 261. |
| 25. 58. Pæonia fl. pleno | Double Peony | |
| 26. 59. Ranunculus Asiat. | Garden Ranunculus | 699. 18. |
| 60. Vinca major | Gr. Periwinkle | 293. 2. |
| 61. Zinnia fl. rubro | Red Zinnia | 964. |
| 62. Berberis | Berberis | 438. 1. |
| 28. 63. Iris lutea aquatica | Yellow Water Iris | |
| 29. 64. Hemerocallis | Day Lilly | 429. 1. |
| 65. Cyanus varius (Centau- rea) | Variegated Corn Flower | 984. 14. |
| 66. Saxifraga punctata | None-so-pretty | 554. 13. |
| 31. 67. Lathyrus odor. purp. | Purple sweet Pea | 872. 10. |
| 68. Tagetes patula | Fr. Marygold | 964. |
| 69. Jasminum luteum | Yellow Jasmine | 17. |

Cl. XIII. Ord. 5.
Polyandria Pentagynia.

Cl. XVII. Ord. 10.
Diadelphia Decandria.

| | | | |
|------------------------------------|--------------------------------------|-------------------------|----------|
| JUNE. | 2. 70. <i>Lychnidea alba</i> (Phlox) | White Lychnidea | 213. |
| | 71. <i>Rosa cinnamæa</i> | Cinnamon Rose | 631. 4. |
| 4. 72. <i>Pæonia fl. pl. albo</i> | | | |
| 73. <i>Lychnis viscaria</i> | | Catch-fly | 580. 3. |
| 6. 74. <i>Iris variegata</i> | | | |
| 75. <i>Tradescantia Virginiana</i> | | Virginian Spiderwort | 394. 1. |
| 76. <i>Lilium rubr. bulbiferum</i> | | Red Lily | 406. 2. |
| 77. <i>Euonymus Europ.</i> | | Wild Spindle Tree | |
| 78. <i>Dictamnus ruber</i> | | Purple Fraxinella | 516. 1. |
| 79. <i>Philadelphus odor.</i> | | Syringa | |
| 80. <i>Rosmarinus arg.</i> | | Silver-striped Rosemary | 38. |
| 81. <i>Medicago cochleata</i> | | Snail Trefoil | 899. 9. |
| 82. <i>Iris Germanica</i> | | Purple Iris | |
| 83. <i>Verbascum Myconi</i> | | Borage-leav'd Auricula | 244. 11. |
| 84. <i>Convolvulus minor stri-</i> | | Streak'd Convolvulus | 214. 35. |
| | atus | | |
| 85. <i>Gladiolus</i> | | Corn Flag. | 57. |
| 16. <i>Citrus Aurantium</i> | | Orange | 901. |
| N | 87. <i>Nigella</i> | | |
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| MILLER. | COMMON. | LINNÆUS | Cl. XIII. Ord. 5. |
|----------------------------|------------------------------------|----------|-------------------------------|
| 87. Nigella | Love in a Mist | 685. | <i>Polyandria</i> Pentagynia. |
| 88. Thalictrum album | Feather'd Columbine | 697. | <i>Polyandria</i> Polygynia. |
| 89. Iris Sufiana | Chalcedonian Iris | 59. 1. | |
| 90. Rosa Austriaca | Copper-coloured (or Austrian) Rose | 648. | |
| 91. Papaver. | | 59. 17. | |
| 92. Iris Graminea | | 1015. | |
| 93. Cypripedium Canadense | | | |
| 94. Mespilus Germanica | Dutch Medlar | 625. 1. | Cl. XII. Ord. 5. |
| 95. Zinnia flava | Yellow Zinnia | 974. | <i>Icosandria</i> Pentagynia. |
| 96. Rosa Eglanteria flava | Yellow Rose | 631. | |
| 97. Delphinium purpur. | Purple Larkspur | 681. | |
| 98. Spiræa frutex | | 630. 1. | |
| 99. Balsamina (Impatiens) | Balsam | 1008. 5. | |
| 100. C. Orchis punctata | Spotted Orchis | 589. 24. | Cl. XX. |
| 101. Clematis integrifolia | Upright Traveller's Joy | 696. 9. | <i>Gynandria</i> Diandria. |
| 102. Rubus Virginienfis | Virg. flow. Raspberry | 632. | |
| 103. Spiræa filipendula | Dropwort | 630. 9. | |
| 104. Rosa Belladonna | Wh. Prov. or Bellad. Rose | 631. | |
| 13. | | | |
| 14. | | | |
| 15. | | | |
| 17. | | | |
| 18. | | | |
| 19. 105. Loni. | | | |

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| 19. 105. <i>Lonicera Diervilla</i> | Diervilla | 232. 12. |
| 106. <i>Sclarea tomentosa</i> | Wild Clary | 39. |
| 107. <i>Carduus Mariæ</i> | Milk Thistle | 925. 14. |
| 20. 108. <i>Rosa Muscosa</i> | Moss Rose | 608. 11. |
| 109. <i>Refeda odorata</i> | Mignonette | 44. 1. |
| 110. <i>Valeriana rubra</i> | Red Valerian | |
| 21. 111. <i>Helianthemum S. Cif-</i> <i>tus minor</i> | | |
| 112. <i>Lupinus alb.</i> | White Lupin | 865. 2. |
| 113. <i>Dictamnus alb.</i> | White Fraxinella | 516. 1. |
| 22. 114. <i>Digitalis purpurea</i> | Purple Fox-glove | 758. 1. |
| 115. <i>Rosa alba</i> | White Rose | 631. 13. |
| 116. <i>Antirrhinum</i> | Snap-dragon | 750. |
| 117. <i>Lath. odor. pict.</i> | Painted Lady Sw. Pea | 872. 10. |
| 118. <i>Hemerocallis fulva</i> | Copper-colour'd Day Lily | 429. 2. |
| 119. <i>Lupinus cærul.</i> | Blue Lupin | 865. |
| 25. 120. <i>Geranium striat.</i> | Pencil'd Geranium | 832. 39. |
| 121. <i>Phlomis fruticosa</i> | Golden Sage | 723. 1. |
| 122. <i>Lychnidea</i> | Purple Lychnidea | 213. 6. |
| 123. <i>Dianthus pict.</i> | Carnation | 560. 6. |
| 124. <i>Padus</i> | | |

Cl. XIX.

Syngenesia Polygamia
æqualia.

Cl. XVI. Ord. 10.

Monadelphica Decandria

| MILLER. | COMMON. | LINNÆUS |
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| 124. Padus Lusitania | Portugal Laurel | 620. 4. |
| 125. Campan. alb. fl. pleno | Double Wh. Campanula | 217. |
| 126. Delphin. perenne Siber. | Siberian Larkspur | 681. |
| 127. Jasmin. alb. officinale | Jeffamine | 17. |
| 29. 128. Citrus Limon | Lemon | |
| 129. Spartium Junceum | Broom | 858. 2. |
| 130. Aconitum | Aconite | 682. |
| 30. 131. Cistus ladanif. | Gum Cistus. | 673. 5. |
| 132. Cistus Laurifolius | Laurel-leav'd ditto | 673. 4. |
| 133. Ligustrum | Privet | 18. 1. |
| 134. Scabiosa Stellata | Starry Scabious | 115. 15. |
| 2. 135. Cynoglossum Lusitanicum | Portuguese Navel Wort | 183. 6. |
| 136. Amaranthus Caudatus | Drooping Amaranthus ; or, Love lies a bleeding | 1060. 14. |
| 5. 137. Helianthus perennis | Perennial Sun-flower | 979. |
| 138. Lychnis Chalcedonica fl. pleno | Double Scarlet Lychnis | 580. 1. |
| 139. Veronica | | |

Cl. XXI. Ord. 5.
Monoechia Pentandria.

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| 139. Veronica Virginica | 25. 2. | Cl. VIII. Ord. I. |
| 6. 140. Tropæolum minus | 461. 1. | <i>Oxandria</i> Monogynia. |
| 141. Borago officinalis | 188. 1. | |
| 7. 142. Lathyrus odorat. alb. | 872. 10. | |
| 143. Anomum Plinii (Sol- num) | 250. 1. | |
| 144. Lilium reflexum | 406. 6. | |
| 145. Oenothera biennis | 464. 2. | |
| 146. Veronica incarnata | 25. | |
| 147. Achillea Ptarmica | 971. 13. | |
| 148. Mirabilis varia | 241. | |
| 7. 149. Lathyrus perennis | 872. | |
| 150. Othonna coronopifolia | 993. 5. | |
| 151. Tamariscus Gallica | 372. 1. | |
| 152. Dianthus glaucus | | |
| 153. Rosmarinus latif. aur. var. | 38. | |
| 8. 154. Lilium album | 406. 1. | Cl. VI. Ord. I. |
| 155. § Solanum edule | | <i>Hexandria</i> Monogynia. |
| 156. § Solanum Dulcamara | 250. 5. | |
| Virginian Speedwell | | |
| Dwarf Nasturtium | | |
| Borage | | |
| White Sw. Pea | | |
| Shrubby Winter Cherry | | |
| Martagon | | |
| Evening Primrose | | |
| Blush Speedwell | | |
| Double Sneezewort | | |
| Striped Marvel of Peru | | |
| Perennial Sw. Pea | | |
| Sea Ragwort | | |
| French Tamarisk | | |
| Mountain Pink | | |
| Gold striped br. I. Rose- mary | | |
| White Lily | | |
| Potatoe | | |
| Shrubby Nightshade | | |

| MILLER. | COMMON. | LINNÆUS |
|---|-------------------------------------|-----------|
| 10. 157. Phaeolus Ind. coccin. | Scarlet Bean | 866. |
| 158. Phaeolus id. alb. | White ditto | |
| 159. Nicotiana Virginienfis | Virginian Tobacco | 247. 3. |
| 160. Azalea viscosa | Wh. Americ. Honeyfuck. | 211. 4. |
| 12. 161. Dianthus Sinensis | Indian Pink | 560. |
| 162. Lil. Alb. purp. striat. | Purple striped Lily | |
| 163. Rapuntium f. Lobelia cardinalis fl. coccin. | Scarlet Cardinal Fl. | 1006. 12. |
| Pisum Americanum | Cape Horn Pea | 870. |
| 164. Hypericum Androsæ- mum | Tutian | 902. 5. |
| 16. 165. Datura fastuosa | Double lemon-coloured Stramonium | 245. 5. |
| 17. 166. Telephium Anacam- feros | Love-Chain Orpine | 374. |
| 167. Epilobium | French Willow | 466. |
| 168. Alcea fl. atropurp. | Dark purple Hollyhock | 480. |
| 169. Alcea flavo subalbente | Straw-coloured ditto | |
| 170. Rosa | | |

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|--|-----------------------------|----------|
| 170. <i>Rosa moschata</i> semper-virens | Evergreen Musk Rose | 631. |
| 18. 171. <i>Lythrum</i> | Loose-strife | 604. 1. |
| 19. 172. <i>Veratrum album</i> | White Hellebore | 1144. 1. |
| 20. 173. <i>Gomphrena</i> | Globe Amaranthus | 311. 1. |
| 174. <i>Rhus Canadense</i> | Canadian Sumach | 366. |
| 23. 175. <i>Echinops</i> | Globe Thistle | 999. 1. |
| 176. <i>Malva Crispa</i> | Curl'd-leav'd Mallow | 841. 17. |
| 177. <i>Lilium refl. coccin.</i> | Scarlet Martagon | 406. 4. |
| 178. <i>Linaria Trifida</i> | Spanish Linaria | 750. 9. |
| 179. <i>Polemonium album</i> | White Gr. Valerian | 216. 1. |
| 180. <i>Tagetes erecta</i> | Marygold | 964. 2. |
| 181. <i>Helianthus annuus</i> ramosus | Branching annual Sun-flower | 979. |
| 182. <i>Papaver album</i> | White Poppy | 648. |
| 183. <i>Iberis purpurea</i> | Purple Candy Tuft | 804. |
| 184. <i>Convolv. min. cær.</i> | Blue Convolvulus minor | 214. 35. |
| 185. <i>Gnaphalium luteo alb.</i> August. | White Everlasting | 946. 4. |
| 186. <i>Lotus tetragonolobus</i> | Winged Pea | 897. 3. |
| 187. <i>Soli.</i> | | |

Cl. XXIII.
Polygamia Monoecia.

Cl. XIX.
Syngenesia Polygamia
segregata.

Cl. XIX.
Syngenesia Polygamia
frustranea.

| MILLER. | COMMON. | LINNÆUS |
|--|---------------------------|----------|
| 187. Solidago | Golden Rod | 955. 9. |
| 6. 188. Lilium Superbum | American Lily | 406. 5. |
| § 189. Jasminum odoratissimum | Indian Jasmine | 17. 6. |
| 9. 190. Hibiscus Syr. purp. | Purple Althæa frutex | 846. 12. |
| 11. 181. After sinensis purp. | Purple Ch. After. | 954. 32. |
| 14. 192. After perennis cær. | Violet perenn. After. | |
| 193. Hibiscus Trionum | Flower of an Hour | 846. 25. |
| 194. Hibiscus fl. albo | White Althæa | |
| § 195. Canna | Indian Reed | 1. 1. |
| 18. 196. Convolvulus major | | 214. 9. |
| 20. 197. After grandifl. (Sinen- fis) fl. albo | White Ch. After | 954. 32. |
| 23. 198. After grandifl. (Sinen- fis) fl. rubro | Red Ch. After | |
| 199. Cyclamen alb. biflorum | White, twice fl. Cyclamen | 201. |
| 25. CC. Carthamus tinctor. | Bastard Saffron | 931. 1. |

Cl. I. Ord. I.

Monandria Monogynia.

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| 29. 201. | After grandia, finens. ex alb. et rub. var. | Var. red and white Ch. After | 954. |
| 202. | § Campanula max. Ur- ticaefolia | Nettle-leav'd wild Cam- panula | 217. 6. |
| 31. 203. | Teucrium Syriacum SEPTEMBER. | Marum | 706. 12. |
| 1. 204. | Saxifraga hypnoides | Ladies Cushion Saxifrage | 554. 30. |
| 205. | Geranium dryophyllum | Oak-leav'd Geranium | 832. |
| 4. 206. | Fumaria flava perennis | Yellow Fumitory | 849. |
| 5. 207. | Datura purp. | Purple Thorn Apple | |
| 8. 208. | Colchicum purpur. * | Purple Meadow Saffron | 452. 1. |
| 209. | Colchicum album * | White ditto | |
| 11. 210. | Clethra | | |
| 211. | Geranium multifidum | Multifidous Geranium | |
| 212. | Geranium rhodosinum | Ger. rose-scented | |
| 17. 213. | Arbutus | Strawberry Tree | |
| 18. 214. | Colchicum fl. pleno ex purp. et albo var. | Double Colchicum | |

Cl. X. Ord. I.
Decandria Mongynia.

* * 208, 9. Both these blossom spontaneous in the Church Meadow of this village: the white is less frequently found wild than the purple.

25. 216. After

| MILLER. | COMMON. | LINNÆUS |
|--|-------------------------------------|----------|
| 20. 215. <i>Viburnum Tinus</i> | <i>Laurustinus</i> | |
| 25. 216. After fl. albo | White fl. After perenn. | |
| 217. <i>Geranium zonale maximum</i> | Greatest horse-shoe <i>Geranium</i> | 832. 11. |
| 218. <i>Ilex (Aquifolium) var.</i> | Capel Holly | 367. 1. |
| OCTOBER. | | |
| 1. 219. <i>Alcea fl. vario</i> | Striped Holly-hock | |
| 3. 320. <i>Lychnis Chalcedonica fl. simplici</i> | Single Sc. <i>Lychnis</i> | |
| 4. 221. <i>Iberis semperflorens</i> | Ever flowering Candy-tuft | |
| 222. <i>Ger. var. aur. zonale</i> | Gold-striped <i>Geranium</i> | |
| 8. 223. After fl. subpurp. | Chinese After, pale purple | |
| 12. 224. <i>Geranium fanguineum</i> | Bloody Crane's-bill | |
| 25. <i>Flos Adonis</i> † | | |
| <i>Opulus fl. pleno</i> † | | |
| <i>Lonicera</i> † | | |
| <i>Cheiranthus</i> † | | |
| 27. <i>Hepatica rub. fl. pleno</i> † | | |
| 29. 225. <i>Crocus Sativus</i> | Saffron | 55. 1. |

| NOVEMBER. | Lavender | 800. 1. | Cl. XIV. Or. 1. <i>Didynamia Gymnosperma.</i> Cl. XV. Ord. 2. <i>Tetradynamia Siliquosa</i> |
|---------------------------|----------|---------|--|
| 2. Anemone purp. † | | | |
| 7. Centaurea var. † | | | |
| 13. Lavendula | | | |
| Primula polyanthos † | | | |
| 29. Chieranthus incanus † | | | |

D E F I N I T I O N S.

THE CLASSES OF PLANTS are determined by the *Stamina*, *Threads*, or *Male Organs* of the Flower; the *ORDERS*, by the *Pisillum*, or *Femiale*.

- 1st. CLASS. MONANDRIA, with *one Stamen*, and so on to *ten*, according to the *Greek Numerals*.
11. DODECANDRIA, from *eleven* to *nineteen*.
12. ICOSANDRIA, *twenty Stamina* or more.
13. POLYANDRIA, *twenty* or more inherent not to the *Calyx* or *Cup*, but to the *Receptacle*.
14. DIDYNAMIA, *four Stamina*; of which, *two* longer than the others.
15. TETRADYNAMIA, *six*; of which, *four* longer than the others.
16. MONADELPHIA; the *Stamina coalescent* in one base.

17. DIADEL.

17. DIADELPHIA; the *Stamina* divided in two bodies.
18. POLYADELPHIA; the *Stamina* distributed in several distinct bases.
19. SYNGENSIA; the *points*, or summits of the *Stamina* conjoined.
20. GYNANDRIA; the *Stamina* seated on the *Pistillum*.
21. MONOECIA; the *male* and *female* flowers separat, on the same Plant.
22. DIOECA; the *male* and *female* flowers on different Plants.
23. POLYGAMIA; these have *bernaphrodite* flowers, with flowers of one sex either *male* or *female* in the same general receptacle.
24. CRYPTOGAMIA; where the parts of Fructification are concealed.

As these pages may fall into the hands of lovers of BOTANY, but yet inexpert in it, and with these I class myself, I have subjoined these explanations from LINNÆUS. And in the *Calendar* have annexed to some (of the most common Plants generally, and, for the most part, such, whose respective characters are particularly distinct) their proper CLASS and ORDER; that NATURE and LINNÆUS may mutually illustrate each other. For the Errors I may have committed, I wish the correction of the candid and intelligent. C. L.

VIGÉAT DIVINI GLORIA RURIS.

§1§ The CLASS and ORDER is placed opposite to the Plant to which it belongs, in the last Column of each page: and is not to be understood to refer to the succeeding Plants.

To the Editor.—By Thomas Ruggles, Esq.

Clare, Oct. 8, 1787.

S I R,

I Have sent you the tract I mentioned in my letter in the last Number of the Annals; and must confess that it is my opinion, your readers will be pleased to see printed in some ensuing Number of your publication, the rational, manly, and eloquent persuasives, to the encouragement of Industry among the poor, contained in some paragraphs of this Address to the owners and occupiers of land, in the southern district of Lindsey in the county of Lincoln; nor can I conceive that the able and eloquent author, or the humane and laudable editors of this pamphlet will be offended, if through the means of the Annals of Agriculture, such excellent language and advice should be more widely disseminated; other language would not convey the ideas in so forcible and elegant a manner, admit, therefore, let me intreat you, the following sentiments in their native dress.

Yours, &c.

T. RUGGLES.

Extract

Extract from a pamphlet entitled, "An Account of the origin, proceedings, and intentions of the Society, for the promotion of Industry in the southern districts of the parts of Lindsey, in the County of Lincoln."

"THE structure of the English poor-laws is an ancient and venerable fabric ; and the wisdom of our State Architects will not hastily decide upon pulling it down to the ground ; it is true, it stands in great need of a most diligent and accurate survey, in order to ease it of much superadded incumbrance—to support it where it betrays a real weakness—to clear the access to such parts as have been unoccupied and neglected, for want of skill in applying them to their intended use—and finally, to make all the additions and amplifications, which the circumstances of later times may require, without offering unnecessary violence to the majestic simplicity of the original edifice. This will necessarily be a *slow* process, the fruit of much information, not easily obtained ; the enquiries, which are to bring it forth, must be issued by sovereign authority—pointedly directed to the most important objects—fully, plainly, and honestly answered—candidly, impartially, and judiciously scrutinized—deliberately, discreetly, and solemnly proceeded upon.

"In

“ In the mean while, let us not despair of success in our more humble, private, and limited endeavours—let us make proper use of the support we may receive from the law, as it now stands, and then we shall be better able to judge what additional strength we shall have reason to wish and petition for.

“ If the magistrates will unanimously, invariably, and resolutely refuse to concur in granting any relief, without the performance of such a quantity, as the pauper, or his family, shall be found able to do—if they will strongly insist upon the overseers procuring such work, and providing the necessary implements and materials for it—intimating to them, that it is both their uncontrollable right, and their absolute duty so to do—admonishing them not to be deterred by any opposition—vigorously supporting the exertions of all spirited overseers, and punishing some of the most refractory, by levying the fine, which the law hath appointed for every neglect of duty in that office, we shall then be able to judge how effectual the vigilant execution of the Statute of the 43 Eliz. ch. 2. will be, as to the due order and government of the poor.

“ If in support of these measures, *Landlords* will encourage their tenants, and give them such assistance as may be wanted towards building, repairing, or fitting up working rooms, and use their influence, and, where necessary, their authority, to prevent

mismanagement of the poor rates—if, by proper removals of the *larger* families of the poor, into a nearer neighbourhood to each other, by leaving only single and able persons, (if any) in the outskirts of the parishes, and by erecting a few cottages in more central parts, the objection of distance from a working room was as much as possible prevented—If (where there is any power or opportunity for building cottages) the circumstance of vicinity to each other, and to the centre of the parish, was invariably attended to, so that they might in some measure, surround the working room—we should then obtain some fair trials, on which to ground a probable estimate, *how much work and to what amount of profit, and with what beneficial consequences, in respect to the lowering of the poor rates, and better educating the infant poor, could be produced by assembling the poor of a parish, and employing them under proper inspection, and at stated times, in the same or various works, and in one or more rooms, according to the circumstances and size of such parish.*

“ Such an establishment appears to me much more generally practicable, incomparably cheaper, and liable to much fewer objections of any kind, than those which have been adopted in so many different forms, ever since the promulgation of the Stat. of the 9 Geo. ch. 7. and which, to the *employing*, annex the *lodging* and *boarding* of the poor
all

all under one roof—a plan which has now had sufficient trial to discover its fundamental defects—and though, by the sanction of local statutes, superadding many excellent regulations, and by the enlightened and active zeal of the gentlemen concerned in the execution, whose patriotic labours cannot be too highly commended—we have seen this mode of maintaining and employing the poor rise, in some manufacturing countries, to the highest degree of perfection which it seems *capable* of; yet even these flattering specimens are far, I apprehend very far, from exciting a wish in considerate minds for a general extension of them to all parts of the kingdom; nor, even in the places where they have been most successful, are they entirely free from such objections, arising from œconomical, moral, or humane principles, as would not, I believe, or not in an equal degree, affect a plan of employment, where the working room would be the only common room to which the poor would resort by way of relief, whenever they had no other work to do, and where the children and old persons might be *constantly* employed, either by the piece or by the day; provided that their little separate cottages were placed within a reasonable distance of it, or the room built in a central situation in regard to them.

“ This is an idea which I have entertained and communicated to my friends some years ago, and

have not yet seen any reason for thinking it erroneous or impracticable; but I should not have had the presumption to make it thus public, or to enlarge upon it so copiously, but that one of the trustees of our society, to whose kindness I owe much information and assistance, and whose benevolent influence is ever ready to be exerted in matters of public utility, favoured me a few weeks ago with the sight of a pamphlet, written by a friend of his, in the year 1771, and entitled, *Five letters on the State of the Poor in the county of Kent*. These letters are so replete with accurate and judicious observations, and the author grounds upon the facts therein stated, plans fraught with so much public spirit, and such extensive and rational philanthropy, as make it an object of no small regret, that so valuable a performance should have appeared in so private a manner; but my satisfaction in reading it was highly increased, when in the fourth and fifth of those letters, I discovered a circumstance which strongly confirmed my above recited ideas, by dignifying them with the most formal sanction of an opinion, solemnly, and deliberately addressed to government in the year 1697, by the great Mr. Locke, in a memorial then delivered by him to the Lords Justices of the kingdom. I have not yet been able to procure a copy of this MS. of Mr. Locke's, which, if it has been since printed, is not to be found in any edition that lies within

within my reach : but the ingenious author of the above-mentioned letters represents *this*, as a fundamental part of the plan recommended in the said memorial ; *that working schools should be set up in every parish to which the children of all such as demand relief of the parish, above three, and under fourteen years of age, should be obliged to come.* To this sketch, the plan above described makes no other addition, than to admit into the same room *grown-persons* out of employ, as well as children, and to incite and encourage labourers not chargeable, or even not belonging to the parish where they reside, to send their children to it upon advantageous terms ; without which addition, there may not in some small parishes be a sufficient number to defray the current expences of the room, and leave a residue towards the maintenance of those who work in it.

“ I acknowledge an exultation in finding these sentiments thus highly honoured by their coincidence with the deliberate opinion of that great man, who is equally revered for his deep researches into the nature and operations of the human mind, admired for his political disquisitions, and esteemed for the rules of education, which he has prescribed : sustained by such authority, I have ventured to speak out ; nay, have considered it as a duty, at a time when the distresses, the immorality, and the enormous charge of

our poor call for the utmost exertions of every individual, and I hope I shall not quite exhaust your patience, by stating, and humbly submitting to your consideration, the particular grounds upon which I rest my preference of such working rooms, to those plans, which include *lodging* and *boarding* paupers under one roof.

“ I. The poor will then continue in the enjoyment of two blessings, for the loss of which, nothing, in the estimate of a free-born Englishman, can afford a compensation, viz. liberty, after their hours of work, and the command of a little separate corner, which they can call their home.

“ II. It may well be expected, that such of the poor as have any industry, would go through their employment *in this way*, with greater chearfulness and alacrity; as it would afford them daily pay for daily labour, without any degrading confinement; and as to the idle and profligate, if the *whole community* were determined to afford them no other relief, it is hard to say, how they could be brought to their duty by any means better than these; especially, as the laws have already provided the magistrates with sufficient powers to punish those who refuse to work, being thereunto appointed, or who wilfully spoil their work.

“ III. The mixing at meal-times, and in dormitories or wards, persons of different ages, dispositions, and characters, has an evident tendency to

to destroy the peace of the quiet and harmless, by the brawls of the turbulent, to seduce the good and well-disposed by the ill advice and example of the wicked, and to raise among them all, jealousies, discontent, and a general depravity, similar in species, though, it is to be hoped, inferior in degree, to the effects of a gaol: and indeed, the same reasons which have of late influenced the legislature to separate those whom vice has already degraded, should, it seems, also operate in the maintaining a separation among such as ill examples have not yet, or not so far corrupted, for he must have a much higher opinion of human nature than it deserves (especially among the illiterate and ignorant) who will expect to see the bad amended sooner than the good seduced, in consequence of their uninterrupted communication. Now, if the poor are not necessarily crowded together, except during the hours, when they are both employed, and under inspection and controul; this danger will be greatly diminished, if it cannot be entirely prevented.

“ IV. The expence of such an establishment must be much less, than where, besides the inspection of their work, and the room and implements common to both plans, victualling and cloathing contracts must be entered into, which besides the reasonable profits of the contractors, open a door to numberless frauds, abuses, and losses; whereas the poor would, and actually do, feed and cloath

themselves for one-third part of the most frugal public maintenance that could be thus afforded them in common, and would be the happier for it. This appeared to me from a fair calculation of the statements of one of the best houses of industry, compared with the maintenance of the like number of paupers with the usual parish allowance per head. The main alteration that seems wanted, is to make such allowance not gratuitous ; but (as far as reason and charity may be expected) the produce of their own labour. This done, I believe, most persons of common experience in country concerns will allow, that the poor *have it in their power* to make the money go much farther in *their* hands than it could in *ours* ; though they may want superintending in this respect, and if any visible mismanagement appears, which happens in fewer instances than is generally supposed, then it would be time enough for the overseer to interfere under the direction of the magistrates, and to pay part of the wages or parish allowance in bread, potatoes, rice, or other cheap and wholesome food, and to reserve a part for cloathing.

“ V. Such *small* parishes might *thus* employ their poor, as could by no means afford to build a workhouse, and need not then submit to many inconveniences of removing their poor to a distant one, from which they are not ready to attend their call, when wanted for the purposes of husbandry, which often require *immediate* assistance.

“ VI. Parishes

“ VI. Parishes *smaller* than these (and they must be small indeed, as the labour of fourteen or fifteen spinners is fully sufficient to maintain them and their teacher) may board the few poor they can have, or a part of them, in some neighbouring parish, where a school is established, until they are properly instructed : and afterwards find them employment at their own cottages, which by this supposition cannot be much crowded. Though after all, it must be owned, that the same quantity of work will not easily be obtained by those, who labour under *this* disadvantage.

“ VII. The size of our labourers cottages cannot upon any other plan, reasonably continue so contracted as it is : for in fact, they seem to be built as *discouragements* to industry : they are fit for nothing but eating and sleeping places ; and it is evident, that the most industrious labourer in the world could not in a cottage reap that advantage and benefit, which he ought to have from the work of five or six children, unless there is a working room to which they shall all have access.”

ON A METHOD OF FATTENING OXEN IN LIMOSIN, IN FRANCE.

By the Editor.

IN a journey to the Pyrenees last summer, I crossed the province of Limosin, where I found a method of fattening oxen, which appeared to me
so

so singular, that I made repeated enquiries concerning it; the following are among the minutes which I made on the occasion *.

In travelling from Paris towards Limoges, the numerous droves of fat oxen struck me very much; it was the end of May, a season which is well known to be one of scarcity, when cattle have not been fattened on spring grass. The oxen we met were remarkably fat, so that any grass which they could possibly have had in a climate not very different in this respect from the south of England, could have had but a small share in bringing them into such high condition. Curious to know how such numbers of fine beasts were fattened, we found some obscure hints of a method, not sufficiently explained to be well understood, but on repeated enquiries in crossing the province from whence they came, we discovered the secret, if it may be called one, and the process is in some respects so singular, that it well deserves to be noted.

They give them the summer's grass, sometimes, but not always, and, at the end of October, or beginning of November, put them to turnips, which they call *raves* and *rabioles*; this article of culture is considerable in most parts of the province; I shall,

* I ought not to omit on this occasion to mention the obligations I am under to Mons. Lazowski, to whose assistance in supplying my deficiencies in the French language, &c. &c. I owe much.

on another occasion, describe their management of them, but to finish the fattening, when their turnips fail, they give their oxen rye-flour, but in a manner truly extraordinary.

They mix the flour with water to the consistency of a paste, which they leave 3, 4, or 5 days, according to the weather, to ferment and become sour; when, they dilute it with water, and thicken this water, to a certain degree, with hay cut into chaff, which the oxen drink. What is still more singular, in order to effect the fermentation the surer and better, some add a leaven (*levain*) to the paste, and none give it to the beasts but when it is become sour. The first day they refuse it, but the second, being thirsty, they drink it, and ever after so eagerly as not to leave a drop, preferring this acid food then to any other. I enquired if they conceived that the food having this acidity fattened the oxen the better? and whether it would not do as well without being sour? they were all decidedly of opinion, that they fattened much the better, on account of the acidity. A large ox will eat in this manner, about a boisseau of rye a day, weighing 22lb. It is given thrice a day.

The system most approved is, to take the ox from grass to turnips, upon which he fattens exceedingly well, and eats them as readily as a horse does oats; and to give him the sour regimen for the last three weeks of his fattening.

They

They have an excellent breed of cattle ; the oxen thus fattened would do credit both for form and fatness to any country in the world. They are all a pale-yellow-colour, or, what is called by some in England, cream-coloured ; have short legs, strait and flat backs, springing well-arched ribs, deep and heavy carcasses, and feel extremely well in every point, especially the hip-bone and rump, for I handled several scores of them ; the weight 60 to 70 stone, at 14lb. some to 80 : they were on an average of many droves, superior to vast numbers of the beasts that are driven at this time of the year to London : So much superior to many of them, as to give me a high idea of this branch of the Limosin husbandry.

The information affords ample matter for reflection. The first circumstance that will strike the intelligent reader, is the remarkable conformity between this fact of an acid food, and that which I have registered of a process nearly similar for fattening hogs. (*Annals, Vol. 1. p. 333.*) It has been found by myself and various persons, with whose practice I am acquainted, that hogs fatten in a superior manner when barley-meal is given, mixed with water, and kept stirring till it becomes sour ; but the application of its practice to feeding oxen, was never made to my knowledge in England. That it is an object of considerable importance cannot be doubted, when I observe, that
the

the information above noted, was not caught accidentally from one or two curious individuals, but was found the almost uniform practice through a large extent of country, which sends, annually, many hundreds of finely fattened oxen to the markets of Paris. I have for more than twenty years procured all the French books on husbandry, which I could meet with, but know not that the least trace of this curious practice is named in any one of them; if their authors would have attended more to the good practices already in their kingdom, and less to scientific theories, their labours would probably have had a very different effect.

It is an object on which very interesting experiments may be made; and I cannot but recommend to my farming readers to try it carefully. The flour of barley, pease, or beans, or buck-wheat, may probably be as useful as that of rye; at least they ought to be tried, and if by any method of this sort, roots could be made to go further in fattening oxen, it would be a very valuable discovery; should any of my readers be inclined to make the experiment, I have only to caution them against doing it with lean oxen; I would by all means recommend such as are at least half fat from grass. I need not add, how satisfactory on such an occasion, a weighing engine would render every trial that can be made. It deserves the enquiry of the curious, who have an opportunity of multiplying such experiments at
what

what period of the fermentation of such bodies the effect in fattening is the greatest. Many intelligent persons, with whom I have conversed on the subject, have the greatest expectations from the vinous, but it is certainly an object highly deserving such varied trials as are most likely to ascertain the point thoroughly. To return:—

They have in the Limosin, some other practices in the fattening husbandry, which deserve noting. The oil cake of walnuts is given to oxen, with the greatest success. About St. George, they give boiled potatoes and chesnuts to oxen, and find them fatten well, also potatoes alone, and many are of opinion, that that root answers better than turnips, or any other food. Between Brive and Cuzenac, their practice is truly singular; a practical farmer, and who had himself the largest oxen we had seen, fattens with maiz, rendered tender by pouring boiling water on it, after which, it is covered close to keep in the steam, and given to the beasts the same day; but in addition every morning and sometimes at night, a ball of pork-grease, which has been salted, as large as an apple; he asserted, that this proves both food and physic, and makes the oxen thrive much better on their other food. This information was confirmed at the next stage, where we were assured, that the grease greatly improved their appetites, and made their coats sleek and shining. Such customs are remarkable; and when
found

found in the practice of common farmers keenly attentive to their profit, deserve particular attention. Comparative experiments upon such subjects, though very different to make with accuracy, should not be neglected; they are hints, which truly deserve to be pursued and may be found to lead, in the hands of intelligent enquirers, to real discoveries.

I shall not conclude this sketch, without remarking, that there are few countries, probably, in the world, from which something novel and curious may not be learned, by men who will travel in pursuit of useful knowledge. The practices of uneducated husbandmen have been generally despised or neglected, and we are apt to imagine of certain countries, that better cultivated ones can learn nothing from them; but this is a great error; on the contrary, I believe that the very worst have practices worth knowing, at least I may assert, that I have not been in any, where something useful to the best, might not be acquired. To discover, collect, and bring to light those scattered practices unknown but to the inhabitants of a district, is the proper business of a farming traveller. It is to be regretted, that there are so few who will give themselves the trouble to make the enquiries necessary for that end; but till observations are greatly extended, and, in consequence, experiments equally multiplied, agriculture, as an art, will remain very imperfectly known. I shall take some other opportunity to shew that there are other points in which

we may learn something from our neighbours on the Continent; not to mention the general object, always an important one, of attempting to ascertain the culture, wealth, and resources of the countries around us, the best source of a noble emulation in the great race of NATIONAL PROSPERITY.

A. Y.

EXPERIMENTS ON FALLOWS AND PREPARATORY CROPS.

By Monsieur Duprè de St. Cotin.

(Translated by the Editor.)

S I R,

THE dispute which was for some time much agitated in the Journal on the subject of fallows, I read with considerable pleasure, and I should have sent you the result of my experiments on that discussion, if I had been as able to write as to read the English; the pleasure I had in our accidental meeting at Dammertin, I need not insist on; I now obey your request in sending the minutes of some remarks and experiments, which I think may be acceptable to your readers, fearing, however, that they will not prove so satisfactory to you in the detail, as they appeared to do in reference in conversation.

The

The following trials were made, as I mentioned to you, on a soil very inclinable in its wet qualities to clay, but not in its productiveness—a medium between sand and clay, but poor; at some depth an imperfect clay; and, as I told you, on my estate on the borders of Champagne.

The management of the farmers has no variety; they plough their land four times for a fallow, sometimes only three, on which they sow wheat; the produce, on an average, is 4 septiers per arpent, of 100 perch, and 22 feet the perch, the septier, I think, weighs, on an average, 250lb. After this they take a crop of oats on one ploughing, and get on a medium 3 septiers, the double measure of wheat. They then fallow again, and soon. I ought to add, that the result of this management is miserable; they are very poor. All the dung they raise is spread on their fallows for wheat.

I began my trials with clover, and in a manner which I believe is extraordinary, and never tried: On such of my lands as are mixed in the field with the farmers, I sowed the seed of that plant with my oats. It took well, and when the oats were reaped, was, in all respects, a fine appearance: The year following, the field was pastured with the common flocks, which grazed my clover without mercy. At Michaelmas, the whole was sown with wheat, but with this difference, that mine was sown at the expence of only one ploughing, while my neigh-

bours put theirs in at that of four. The result was, that my wheat was, beyond all contradiction, the best in the field; calculated to be so by one-third.

As clover proved thus beneficial, when too much pastured by hungry flocks, I had a mind to try it under a more careful culture; I, therefore, in order to have the opportunity of making experiments at will, ploughed up an inclosed old pasture of no great value, and sowed oats and clover on the turf; I was totally disappointed; a worm eat my crop up entirely, and the farmers ridiculed me as a man who was too soon carried away by novelties.

But as this worm has pestered me more than once in my succeeding practice, I think it proper to add a word or two on it. I find that wheat, barley, and oats, are the most subject to its ravages; rye very much, but not equally; pease but little, and harricots not at all; but potatoes, cabbages, &c. are quite free from its attacks. From several observations, I find that it is not destroyed under three years cultivation.

When my new field was freed from this destructive enemy, I made the following experiment. I divided it into 14 parts, which I sowed with;

1. Pease,
2. Vetches,
3. Potatoes,
4. Cole-feed,
5. Cabbages,

6. Flax,

6. Flax,
7. Hemp,
8. Summer fallow of 4 ploughings,
9. Oats,
10. Barley,
11. Wheat,
12. Rye,
13. Harriots,
14. Clover of the preceding oats.

These crops were all gathered, and then the whole sown with wheat, but I should remark that the hemp was good for little, the soil being much too weak for it: the flax was very indifferent, the cole-seed was eaten on the land by sheep, but the crop was small; the cabbages were forward ones, but very poor; they were cut and sold to the poor-people. The clover was mown twice. The rest of the crops were tolerable; neither good nor bad. The following wheat, which was the object of the experiment, turned out as follows:

1. That after the clover, the best of all,
2. That after the vetches the next,
3. That after pease next,
4. That after hemp next,
5. That after summer-fallow next,
6. That after flax next,
7. That after cole-feed next,
8. That after harricots next,

9. That after potatoes next,
10. That after cabbages next,
11. That after rye next,
12. That after barley next,
13. That after oats next,
14. That after wheat next.

This experiment convinced me so much of the benefit of clover, that I framed another experiment, to see if such advantages would attend it in different stages, and also different grasses.

- No. 1. Was clover as before,
2. Clover, two-years-old,
3. Clover, three-years-old,
4. Lucerne, nine-years-old,
5. Old common pasture.

All were ploughed and sown with wheat. The result was remarkable, for the lucerne gave, in point of straw and luxuriance, by much the finest crop; it was calculated to be almost double to several, but beaten down and greatly injured.

2. The next best was the clover, of two-years old,
3. The next was the clover of one-year,
4. The next was the clover of three-years,
5. The worst, and by much, was the pasture, being eaten by the worm abovementioned.

If lucerne, of nine years, is so beneficial, clover, of three, ought to be better than clover of two; and

and two better than one, but the contrary happened; I know not at all how to account for this *.

My next experiment was on fallows of different duration; for I conceived, if fallowing was beneficial, it must result from the rays of the sun being concentrated and fixed in the particles of the soil, and becoming, by some unknown process of nature, the food of the plants sown in it; whether the operation be of this nature, or whether the sun's rays no more than warm the soil, and create, by fermentation, an intestine motion in it, is not at present the enquiry; in either case, a fallow of two years ought to be better than one of a single year, and one of three years better than one of two. In order to ascertain this, I made the following trial:

1. Fallow one year.
2. Fallow of one year dunged.
3. Fallow of two years.
4. Fallow of two years, dunged.
5. Fallow of three years.
6. Fallow of three years, dunged.
7. The land left to the spontaneous growth for three years without ploughing,
8. Clover of one year.

* The fact is easily accounted for: lucerne, a perennial plant, keeps possession of the ground, and excludes the bad grasses: clover, a biennial one, admits them after the first year.

A. Y.

9. Clover of two years.

10. Clover of three years.

All were sown with wheat. The result was, that

8. Was the best of all.

1. The next.

9. The next.

2. The next.

3. The next.

4. The next.

10. The next.

6. The next.

5. The next.

7. The worst.

This effect is very extraordinary, and such as I know not how to account for; the dunged wheat was all mildewed, the rest escaped; this conclusion may, however, certainly be drawn, that fallow is a most useless expence in all cases, and in some a mischievous one*. These trials, and others to which I only alluded in our conversation, convinced me that the common methods of our farmers were wrong, and that fallowing was a real loss to the kingdom, to the amount certainly of many millions.

I have not in the preceding crops named turnips; it is not that I overlooked them in my trial, but as I intend sending a paper on the cultivation

* There are many enquiries to be put on this trial before it can be admitted as decisive; I have written for an explanation, and shall insert the reply when I receive it.

to our Society of Agriculture, I shall only at present offer you some general observations.

I. The culture is totally incompatible with the open common fields, which are almost universal in France.

II. They imply a change of sowing wheat every fourth year according to your instructions, instead of every third year as at present.

III. They are not represented as a profitable culture without great stocks of cattle to eat them, an article in which our farmers are very much deficient.

IV. They are apt, as I have found, to be very much eaten by game, and if either turnips or game are to be given up in France, you will not be long in discovering which : turnips in our capitaineries are perhaps an impossible article of culture.

V. You do not represent their value even in England itself, as to be at all tempting ; for if I understand right several passages in your Annals, they never pay the expence of their cultivation ; this would in France be very discouraging, and, perhaps, render the culture unadvisable.

I cannot quit the subject without remarking that your correspondent the Professor, who has been so very severe on our government for their aukward attempts to introduce this cultivation, was not perfectly well informed where he should seek for good turnips, I could have shewn him very good ones in

the fields of men who will not cultivate them any more for want of profit attending them; probably owing to some of the causes I named before; but surely those causes are no proper subjects of the ridicule of foreigners—unless the English think it wise to laugh at all nations who are not blessed with a government equally good with their own. But your correspondent's irony was directed against the academicians.—To them, therefore, I should leave him; I do not class in the number.

I shall not lay down the pen without making a few desultory observations in reference to points which passed between us in conversation.—You seemed to condemn all public attention to forests and woods, as trifling objects which should be left to themselves; I dare say it may be so in England, where you have coal in such plenty, but you may be assured that the contrary is the fact in France, where the scarcity every year becomes more and more alarming.* And this leads me to mention a tree on which I have made some trials, which are very promising; the Poplar of Italy. It is fit to cut for building uses at 12 years; and produces from a given space of land a greater quantity and weight of wood than any other tree I know. They thrive with me much the best on low meadows,

* This may be, and yet no public measures ought to be taken. When the scarcity becomes such as to give a great profit on planting, which is not the case at present; great tracts will be planted, and more care taken to keep cattle out of woods; demand and competition will do the whole. A. Y.

upon a gravelly, or sandy soil, near brooks. I have them of 8 years growth, 40 feet high; and they may be planted in cuttings of any size, I have used them for rafters, small beams, studs, boards, &c. even exposed to the weather, they have stood 16 years without the least decay, with no other care than brushing them with oil, tar, and brick-dust, laid on hot. In a word, I hold them to be of infinite importance.

My experiments on maiz, are not upon a large scale, but they are sufficient for convincing me of the great value of the plant; I do not attempt cultivating it for seed, though I believe it would succeed very well; but I think soiling for cattle an object better adapted to it in our northerly parts of France. I sow it thick the beginning of May, on a very well dunged winter fallow, and it rises so thick as to choak and destroy all weeds. When just opening into ear, I cut it, and give fresh to cattle every day, and with considerable success; I have found, that a good arpent will maintain four cows, from June to September, which appears to me to be a very great produce. The wheat which I have had after it, is amongst the best of my farm; and equals that from clover; in a word, I am much surprized, that this very valuable crop is not generally cultivated in the north as well as in the southern parts of the kingdom.

With potatoes I must confess my success has been very poor; my crops have been pretty good,
but

but none very large; but that is not the greatest evil, with what I am able to get I know not the right means of converting them to any considerable profit. Hogs consume them best, but they do not fatten on them, which is contrary to what I meet with; not only in many English authors, but even in your Annals, yet I boil them carefully. I think they answer tolerably with cows, but they must be well cleaned, which is a troublesome and expensive operation, unless they grow on dry sand, I ought not, however, to conceal that a neighbour of mine is of a different opinion, and thinks them the most valuable crop a farmer can cultivate.

Lucerne I have tried in Monsf. de Charteau-vieux method of cutting the tap-root, and will venture to pronounce it very bad; and that the common mode in which it is every where cultivated in France, is infinitely preferable. One experiment I made on this plant, seems to be so uncommon in its success, that I shall insert it here. I cut from an arpent, in four years, 7000 bottles of hay; each 12lb. or 84,000lb. which so very far exceeds every thing else in this country as to prove the extreme value of the plant. The land was, however, of the first quality, well-manured, and, I may say, well-managed.

Thus, Sir, I have performed my promise, though I fear not much to your satisfaction*, but so hasty

* Perfectly so. A. Y.

a sketch is not consistent with full details : Yet I am clear in the accuracy of what I here communicate, however great the deficiencies may be.

I am, &c. &c.

F A R M I N G N E W S.

Italy.

BY various accounts which have been received from different parts of that fine country, it is asserted, that their crops of French beans, maiz, and millet, upon which the poor people principally depend, have almost entirely failed, owing to the drought; and that the parts of the kingdom of Naples which used to be the most productive in wheat, have this year but a very small produce. The consequence has been a great rise of price through most of the countries that border the Mediterranean; the present situation of the united States of America will scarcely allow their supplying the demand, to whom, on former occasions, recourse has been had, and the war between the Turks and the Russians will prevent any coming from the Black sea.

France.

July 27, 1787, the Parliament of Dauphinè published an arrêt, prohibiting the Butchers of that province

province from killing any calves under six weeks old, or more than ten; in which they have this passage: “———— and it is very clear that this
 “ great consumption in rendering the species more
 “ scarce, augments, considerably, the price of cat-
 “ tle, and consequently is prejudicial to agricul-
 “ ture ———” It is perfectly astonishing, that among so enlightened a people as the French, there can yet remain so much political ignorance; a great consumption, and high price of cattle, hurtful to agriculture! What nonsense!—as if there could be a better premium upon exertions in producing, than a high price of the thing produced. As if a Parliament of city lawyers can know better how to manage the supply of markets, and the right age of killing the farmer’s stock, than the farmer himself—and as if a high price would not induce them to breed, better than all the arrêts of all the Parliaments in the world.

Lorraine.

The ravages of the smut have been very general this year among the wheat in all Lorraine, and the three Bishopricks have equally experienced this scourge. Nevertheless, in the midst of the general contagion, the village of Deftrich has almost entirely preserved its crops from this malady: the fact seemed so remarkable, that many enquiries were made into the methods employed for
 escaping

escaping it. All their secret consists in the choice of the lime which they employ in preparing their seed. They use the purest quick lime they can get: It is essential to be at the kiln the evening preceding the sowing; they put the lime in a cask well shut, and in a dry place. They make a strong lye of wood ashes, which they pour upon the lime slaked at the bottom of a tub; the quantity of lime equal to that of the ashes used for the lye. Such pieces as do not slake they take out; in this lye they put their seed, stirring it well, and skimming off what floats, leaving it for 12 or 15 hours. They dry it on the floor, and sow it as soon as the grains do not adhere together. Two other precautions they take, which are, to use only old wheat, and to sow only on land ploughed from 15 to 20 days." Such is the account, and on it I may observe, that it is more probable that the using old seed, should, in this process, be alone the effective point, than any possible preparation of lime. But, *fiat experimentum.*

To the Editor.

Hethel, Nov. 22, 1787.

S I R,

I Have sent you an account of the parish of Ketteringham, in which I have endeavoured to observe as much accuracy as the nature of the subject would

would admit.—But you who have been so extensively conversant with country business, need not to be informed of the difficulties with which parochial enquiries of this kind are usually attended.—The suspicious caution that overawes the generality of farmers, who are ever apprehensive that every question comes armed with some sinister hidden meaning, renders it almost impossible, without the greatest attention, to arrive at the truth.

Indeed, I must freely acknowledge, that had I not been greatly assisted in my investigation by the gentleman who superintends Mr. Atkyn's estates, it would have been much more imperfect than it is. I hope that gentlemen who are inclined to favour the author of the Annals with communications of this sort, will bear in their minds the above observation, as I am thoroughly convinced, that unless they do, they will be liable to much error and misinformation.

I am, Sir,

Your humble servant,

MILES BEEVOR.

Account of the Parish of KETTERINGHAM, from
1700 to 1786, both included, taken October
8, 1787.

| Years. | Baptisms. | Burials. |
|--------|-----------|----------|
| 1770 | 4 | 8 |
| 1701 | 6 | 3 |
| 1702 | 3 | 3 |
| 1703 | 8 | 3 |
| 1704 | 2 | 3 |
| 1705 | 4 | 1 |
| 1706 | 4 | 1 |
| 1707 | 3 | 1 |
| 1708 | 3 | 3 |
| 1709 | 3 | 6 |
| 1710 | 2 | 4 |
| 1711 | 3 | 3 |
| 1712 | 4 | 4 |
| 1713 | 2 | 5 |
| 1714 | 4 | 1 |
| 1715 | 5 | 0 |
| 1716 | 3 | 1 |
| 1717 | 4 | 3 |
| 1718 | 4 | 1 |
| 1719 | 7 | 4 |
| 1720 | 1 | 2 |
| 1721 | 8 | 2 |
| 1722 | 5 | 2 |
| 1723 | 5 | 2 |

1724

| Years. | Baptisms. | Burials. |
|--------|-----------|----------|
| 1724 | 5 | 1 |
| 1725 | 8 | 3 |
| 1726 | 2 | 3 |
| 1727 | 5 | 7 |
| 1728 | 1 | 12 |

| | | |
|------|---|----|
| 1729 | 2 | 11 |
| 1730 | 3 | 1 |
| 1731 | 2 | 4 |
| 1732 | 2 | 1 |
| 1733 | 6 | 3 |
| 1734 | 3 | 1 |
| 1735 | 4 | 5 |
| 1736 | 3 | 1 |
| 1737 | 3 | 2 |
| 1738 | 3 | 1 |
| 1739 | 7 | 2 |
| 1740 | 4 | 3 |
| 1741 | 1 | 6 |
| 1742 | 2 | 0 |
| 1743 | 1 | 1 |
| 1744 | 3 | 4 |
| 1745 | 1 | 0 |
| 1746 | 1 | 0 |
| 1747 | 1 | 5 |
| 1748 | 9 | 1 |
| 1749 | 3 | 1 |

| Years. | Baptisms. | Burials. |
|--------|-----------|----------|
| 1750 | 5 | 2 |
| 1751 | 3 | 3 |
| 1752 | 1 | 4 |
| 1753 | 5 | 1 |
| 1754 | 5 | 7 |
| 1755 | 1 | 0 |
| 1756 | 2 | 1 |
| 1757 | 3 | 3 |

| | | |
|------|----|---|
| 1758 | 3 | 0 |
| 1759 | 5 | 4 |
| 1760 | 2 | 0 |
| 1761 | 10 | 0 |
| 1762 | 6 | 1 |
| 1763 | 4 | 0 |
| 1764 | 7 | 3 |
| 1765 | 5 | 5 |
| 1766 | 0 | 0 |
| 1767 | 1 | 2 |
| 1768 | 4 | 4 |
| 1769 | 1 | 4 |
| 1770 | 2 | 2 |
| 1771 | 3 | 1 |
| 1772 | 5 | 3 |
| 1773 | 2 | 1 |
| 1774 | 1 | 0 |
| 1775 | 5 | 0 |

| Years. | Baptisms. | Burials. |
|--------|-----------|----------|
| 1776 | 2 | 1 |
| 1777 | 6 | 0 |
| 1778 | 0 | 0 |
| 1779 | 3 | 6 |
| 1780 | 5 | 3 |
| 1781 | 3 | 7 |
| 1782 | 3 | 4 |
| 1783 | 0 | 2 |
| 1784 | 7 | 4 |
| 1785 | 2 | 2 |
| 1786 | 5 | 3 |

| | Baptisms. | Burials. |
|------------------------------|-----------|----------|
| First period of 29 years, | 118 | 92 |
| Second period, | 89 | 74 |
| Third period, | 102 | 62 |
| Total. | 309 | 228 |

Number of inhabitants in the parish, October 8, 1787=166.

Number of houses which pay to the window-tax,=8.

Total number of houses in the parish=20, of which 14 are single, 5 double, and one triple.

Number of acres in the parish above 1200, about 200 of which are pasture.

Land varies in quality considerably, from dry sandy loam to wet tenacious clay, lets upon an average at 12s. 6d. per acre.

Quantity

Quantity of wheat annually cultivated from 175 to 200 acres; above one half of which is set*. One farmer in particular has this season set his whole crop, which consists of upwards of 50 acres.—General course of crops is as follows,

1. Turnips,
2. Barley,
3. Clover,
4. Wheat,

From 7 to 800 acres arable—About 150 coppice, and the remainder pasture, roads, &c.

By the return made to parliament in 1776, the money raised by parish assessment was 79l. 7s. of which 59l. 14s 3d. was expended for the relief of the poor.

By the return made to parliament in 1786, the whole sum raised by assessment, was 100l. 11s. 6d. Net money expended on the poor, 59l. 14s. 3d.

REVIEW OF NEW PUBLICATIONS RELATING TO AGRICULTURE.

I.

Memoire et instruction sur la culture, L'usage et les avantages de la racine Le Disette. Par M. l'Abbé de Commerell. 3d. edit. Paris 1787. 24 fols.

THE object of this pamphlet has made a considerable noise in France, where it was sup-

* Will this gentleman have the goodness to inform me of the success of this set wheat, respecting produce, saving, profit, mildew, &c.?
A. Y.

posed to be a new discovery of such great importance to husbandry, as to prevent any future apprehensions of scarcity of winter food for cattle, could the cultivation be sufficiently extended. The following is a short extract of what the author offers concerning it to the public. That it is commonly cultivated in some provinces of Germany with great success. That the seed should be sown from the end of February to the middle of April, on a piece of rich land, in high order, for a nursery, from which to transplant the roots. That the field designed to receive them should be well dunged and deeply ploughed. In moderate land, they come to 4 or 5lb.* and the leaves are cut as often; in good land they weigh 9 or 10lb. and the leaves are cut 8 or 9 times. “In 1784” says the Abbé, “I planted them upon a very moderate soil, and the finest roots weighed not more than 5lb. In 1785, I put them in upon a good wheat land, but strong and compact, where they could strike, but with difficulty, yet they weighed from 7 to 10lb. Upon a soil, light, sandy, and rich, they come to

* I saw the plantation of them in the royal garden at Paris, upon a soil as rich as can be supposed in a great city; the largest plant in the bed, would not exceed, I should guess, 5lb. Mons. Cretté, at Dugny, near St. Denis, shewed me his plantation, on excellent land, and his largest root did not equal a common red beet, which we weighed, and which was 5lb. In the introduction of a new plant, it is impossible to be too cautious of exaggeration. A. Y.

a greater size; they have been found to weigh 14 and even 16lb.² He then observes, that though the best time to sow be as before noted, yet it is right to sow every month. In 1784, the fly destroyed *four* times the turnips he had sown, and he substituted this root instead of them, it was in the month of August, and yet he had three crops of leaves, and the roots weighed from 3 to 4lb. In the beginning of May, they are to be transplanted, provided the plants are large enough, in rows, at 18 inches in quincunx order; and he remarks, that a man will plant from 1800 to 2000 in a day. On this, the Abbé adds a note, to inform his readers that the seed is sold at Paris on his account, at 4 livres 10 sols a pound; I wish this had not been in his pamphlet, if he expects to introduce it as a national object: In all new articles of culture, the sale of the seed at a high price, yields by far the greatest profit to be expected; and our (or rather the French) Rocque made more money by the seed of burnet, than five hundred men will probably make by the plant; and yet it has its use. But Mons. l'Abbé goes on to desire his correspondents to pay the postage of their letters.

At the end of June, or beginning of July, when the external leaves are a foot long, he directs the first crop to be made, and the roots to be hoed. In good land, he says, they may be gathered every 12 or 15 days. He has remarked, that in the space

of 24 hours, the leaves have grown from 25 to 30 lines in length, and from 18 to 20 in breadth. Oxen, cows, and sheep, eat these leaves readily, and fatten on them. All sorts of poultry also, when cut amongst bran. Horses even eat them very well. But here the Abbé makes an observation; he says, that cows give excellent milk and cream on the leaves, but that if they are kept to them longer than 15 days, they fatten in a striking manner, and fall off in their milk, till at last they are quite fat: and they have the same effect on oxen and sheep. Marvelous leaves!

When the frosts come, the roots are to be taken up; they must be taken up dry, or they will not keep well. For preserving them from the frost, he directs them to be placed in trenches in the earth, covered first with some straw, and then with earth. In the application of the crop, he directs them for all sorts of cattle, horses, and sheep, and makes them equally good for all; here he gives an experiment. In May 1785, he planted 16 thousand and some hundreds of these roots, in a field of two arpents, and $\frac{1}{8}$ th measure of Lorraine; the arpent being 250 verges, and the verge 10 feet of 10 inches, (French.) From the beginning of July to the 15th of November, seven cows and three calves were constantly nourished upon the leaves, mixed with $\frac{1}{3}$ d, or $\frac{1}{4}$ th of grass: and from the 20th of November, they eat the roots cut. The cows
made

made two meals a day, each of 16 or 18lb. of the roots, mixed with 4lb. of straw and hay, cut, and their milk good and abundant, as in summer.

The Abbé has also an experiment in fattening oxen. Four oxen, very lean, had each of them twice a day 20lb. of roots mixed with 5lb. of after grass hay: and in three months they were fat enough to be sold.

In addition to the memoir on these roots, the author adds a section on rearing calves, which contains nothing new. Another on the culture of carrots; his scheme is that of the Dutch, sowing the seed with barley, and having something of a crop in autumn; in relation to English husbandry it will naturally occur, that barley ought rarely to be sown without clover, and that both are inconsistent. He gives also a section on Spurrey, as a food for cows; we have no plant hardly so contemptible, yet certainly those enlightened farmers the Flemings use it. But there must be many much more accurate, and particular accounts of it before an English farmer ought to attempt it.

Upon the whole, this performance proves, if it proves any thing, too much: the assertions and rules here brought together, ought to be the result of twenty years experience, on a large scale, and no inconsiderable capital employed: To raise a large crop of a root, is now adays the least part of the business. To try them fairly on cattle, de-

mands abundantly other efforts, and an infinitely greater expence and difficulty. Trials to be satisfactory must be comparative, and in that career, all that the Abbé has said, would be but gratis dictum. I must observe, that not one satisfactory experiment on the application of this root in feeding cattle, has yet been made in France; and therefore, the merit of this performance remains yet simply *proposing* something which *may* be useful.

II.

Recueil de Mémoires sur la Culture et le Rouissage du Chanvre. Couronnés ou approuvés par la Société Royale d'Agriculture de Lyon. 8vo. 1787, Paris, Perisse.

THE Society here mentioned proposed a premium for the best memoir, in answer to the following questions:

1. What is the true theory of watering * hemp?
2. What are the best methods of perfecting the practice, whether the operation be performed in water or in open air?
3. In what cases is either of those operations preferable?
4. Is there any way of preventing the disagreeable odour, and the prejudicial effects which attend watering it in water?

* We have no word as I know for *rouissage*; the partial rotting meant by it, is always, in English, called *watering*.

Monfieur L'Abbé Rozier fent a memoir which obtained the prize; and Monf. Prozet another which received the *acceffit*. Thefe two are printed in this collection with two others upon the fame fubject.

By giving the titles of the Abbé Rozier's chapters, and adding a few leading circumftances, his method of treating the fubject will be feen.

Of the culture of hemp and of the proceffes already in ufe in watering it. In this introductory fection, the Abbé takes occafion to obferve that agriculture in France “will revive without doubt, if liberty and protection be given to agriculture, and to *agronomes érudits* encouragements, and even recompenfes proportioned to their labours, that they may be thereby in a fituation to follow them with the greater fuccefs. It is thus that in many States of Italy, in Poland, Sweden, and Ruffia, thofe valuable men have been protected and rewarded.”—I am inclined to believe, that the author gives more credit to thofe countries than they deferve; and that the eftablifhments he alludes to have not been put on a footing, effective either as institutions or rewards: And, probably, no marked attention of fuch a nature will be paid to the profefors of this ufeul art in any country; for the encouragements given to merit, feem throughout the world to flow in very different channels. The farmer, who like the learned Abbé looks to the government of his country

country for rewards, must change his vocation ; let him turn merchant, manufacturer, artizan, painter, poet, or musician, he can scarcely choose wrong ; there is none in which he will not have a better chance than in his own ; and in general, he may be assured, that encouragement will flow in an inverse ratio to the utility of the profession. If all that has been done in France in this line was known, it would exceed that of any other country ; but it has been done without knowledge and without judgment.

“ In 1783, the naval consumption of hemp in France, was more than 400 millions of pounds weight, and much more than a third of it was imported from foreigners.” The quantity here mentioned, makes near 200,000 tons, and the import above 60,000, which appears almost incredible.

“ In 1686, and in 1722, the export of our hemsps was rigorously prohibited ; hence the culture was abandoned to such a degree, and hemp became so scarce, that in 1749, government was obliged to suppress the duty upon the import of foreign hemp. This new law completed the discouragement of the cultivator, because he could not support the competition. The new States of America have understood their true interest much better, and given a bounty on the exportation of it.”

Chap. I. *Culture of hemp.* Sect. 1. *Description of the plant.* Sect. 2. *Soil and preparation.* The author has here a passage, which is difficult to under-

understand, “ it is demonstrated, that *fromentaceous* plants absorb from the atmosphere a great part of the fluids necessary to their vegetation.” Exactly the contrary has been supposed by so many writers on the subject, that it is pity he did not further explain himself. For dunging the land, he directs the farmer to prefer that of curriers, tanners, and taylors.” Had the learned Abbé made comparative experiments on manures for hemp, he would not have given this advice, which is certainly erroneous—and erroneous in a point of great consequence in the culture : In truth, the difference of animal manures from manufactured and unmanufactured substances is so great, that no person who makes the trial will ever mistake them, the superiority of the latter is so clear and decided.

After observing that hemp loves humid soils, and those in the neighbourhood of water, he goes on, “ It is not, that hemp demands to be flooded, on the contrary, *aquosity*, or a too great humidity injures it much ; an effect of which, we may judge by the form of the root.”—This remark seems rather inconsistent with the irrigation of hemp regularly in hot climates ; in Catalonia it is flooded every day. And the effect, in spite of the root, is very great. He makes a distinction in this chapter of hot and cold dungs, which is a language to which it is difficult to assign ideas.

Sect. III. *Seed.* He directs, when the plants are 4, 5, or 6 inches high, that they should be hoed to thin them ; if the thread is designed for coarse linen, or for cables or cords, they may be left at 8 or 10 inches ; if for fine linen, 4 or 5. In England, hemp is never hoed. Has the Abbé made experiments on this point ? I have not, and therefore, I shall add nothing.

Time of sowing. If there is a fixed time to be named for sowing, he says it is that when to all appearance there is no further danger of frosts : and he advises every man to have double the seed he wants, that if his young plants are killed by it, he may sow again without an extra price from the demand so occasioned. A septier of seed, he says, is sufficient for an arpent measure of Paris." I suppose he means the septier of Paris as well as the arpent, which contains 240lb. of wheat ; this, if so, is much more than necessary, and quite inconsistent with the distance he assigns for the plants. The crop he states at 700 to 900 lb. of thread, and often one-third more on lands very good and well manured. This thread is worth from 6 to 15 sous the pound, according to its quality. It tripples its value when worked in a superior manner. " I have seen in Frizeland, to 24 livres paid for the spinning alone of a pound of hemp combed and prepared." If we take the average of 800lb. and the mean price of $10\frac{1}{2}$ sous, the crop amounts per arpent,

at

at 10½ the livre, to 18l. 7s. It would have been much more satisfactory to have given the produce totally unmanufactured.

Sect. IV. *Gathering the hemp.* Male hemp he states, to be ripe in France the middle of August; and condemns the practice common, of gathering the female at the same time; and asserts, that returning a second time to gather the plants carrying seed, will not occasion a greater extra expence than 3 livres—per arpent, I suppose.

Chap. II. *Of the different methods of watering hemp.* Sect. 1. He condemns the exposition merely to the air for this purpose, because the gluten of the plant experiences no good, if any fermentation; that by frost, Sect. 2. he represents as still worse, and merely a mechanical division. He then, Sect. 3. gives directions for watering in both stagnant and running waters; and in Sect. 4. for drying it; he thinks, in climates where the sun has not force enough, that exposing the hemp to heat over a fire, is much better than drying in ovens.

Part II. Of the essay is composed of the improvements, &c. proposed by the Author. Chap. I. *The theory of watering.* Sect. 1. *Hemp Analyzed.* The chief end of this section is to shew that the gluten which holds together the fibres of the bark, is distinct from it, and that the object in watering, is to search for a menstruum which will dissolve it without affecting those fibres. He remarks, that
the

the juice obtained from vegetables, whether from their bark or other parenchymatous parts by infusion, maceration, or decoction, is either a gum or a resin. Hemp, he says, is abundant in an essential oil, that is to say, contains a resin; and he determines, by an experiment of placing a pound of hemp, in digestion in spirit of wine, that the gluten of it is a gummous resin; which he remarks, Dr. Home had already discovered, in his fine experiments on bleaching. The best solvents of this substance should be brandy, oily spirit of wine, prepared like that for bleaching silk, soap, lime-water, caustic alkalies, all which are good solvents of gummous resins, like the gluten of hemp.

Sect. II. *Phenomena of watering.* The chief is the result of the fermentation which the hemp undergoes; the first air which escapes resembles atmospheric. The third day it gives an acid gaz. Towards the 5th inflammable gaz. If the water is stagnant and in small quantity, it colours, and becomes troubled, diffusing a fetid odour, which spreads maladies, and even death. The subject of this fermentation is the gluten.

Chap. II. *Methods of perfecting the practice.*
 Sect. I. *Of the sheaves, and their arrangement.* He remarks here, that in the north of France, and of Europe, hemp ripens but little; it vegetates slowly; its fibre is more weak, although longer and thicker; but in the south, its vegetation is rapid,
 the

the fibre is finer and more firm, even should the plant be shorter. In such situations, in the Cantons of Italy, for instance, when the soil is proper, and enriched by dews, fogs, and light rains, the hemp is excellent: the time given to watering, must depend on these circumstances. He directs the ripest and longest stalks to be put in the center of the sheaves; and remarks, that the expert waterer knows, that the green and thick hemp is a shorter time in *rotting* than the green and the fine; the green shorter than the yellow; the long a less time than the short; the root sooner than the head; and hemp long gathered and dry, much longer than the fresh. And this work he directs never to be delayed longer than the middle of October. The duration of the operation, he states at 4 or 5 days in July; 5 to 8 in September; and 9 to 15 in October.

Sect. II. *Qualities of the water.* He says, from many trials that he has found the most advantageous temperature of the water to be from 10 to 12 degrees of Reaumur's thermometer; and in regard to stagnant and moving water, he placed hemp in the same stream, where it was tranquil, and where it was agitated, and the former prepared soonest and best. Stagnant waters, which contain chalk or the infusions of destroyed vegetables; marsh water, and that of dunghills, are excellent for the purpose. They have a leaven which accelerates fermentation.

Sea-

Sea-water, and that of salt marshes, &c. may be usefully employed also, but he states nothing like an experiment on this ; a very little sea salt accelerates putrefaction, as Sir John Pringle has shewn, but much impedes it. Alkaline waters he recommends.

Sect. III. *Of the watering pits, &c.* directs the bottom of artificial pits to be paved, which in various soils would be acting contrary to the principles he has laid down. Sect. 4. *Of watering in the open air.* The time necessary, frequently a month. He has tried with success, the moistening it with lime-water : and observes, that in Holland they do the same with sea-water.

Chap. III. *Prevention of mischievous effects.*—
Monsi. l'Abbé Rozier here recites some experiments he made with fish, upon the poisonous qualities of hemp—from which he reduces, that the fermentation of it destroys the narcotic virulence natural to the plant. He draws some very well-founded conclusions contrary to the laws in France which prohibit watering hemp in rivers ; the same obtain in England ; but he does not by any means shew that watering in rivers is necessary, rather the contrary, for tranquil waters, are better than moving ones, according to his own experiments. Where there are none of the former, certainly the latter ought not to be prohibited. Sect. 1. *Experiments.* The first part of this section is not an experiment, but a proposition, and rather a wild one, of building wind-mills

mills to give motion to stagnant waters to prevent the ill effects of putrid hemp. Objections multiply by thousands to such a project, but not worth insisting on. But the great secret, which the Abbé produced on this occasion, is the addition of lime-water. The paucity of *experiments* in this section, which is introduced under that title, will not fail to strike the experimental reader. It perhaps deserves notice, that it, properly speaking, does not contain one.

Sect. II. *On the dry rouissage.* We come here to the only novelty in the whole essay, that of digging a hole in the ground, and *rotting* the hemp in earth, instead of water. It must be allowed, that there was a species of ingenuity in this thought very striking to minds, that think novelty comprises every merit. But it will be thought by other readers perfectly astonishing, that a writer with the least tincture of modern EXPERIMENTAL philosophy, should lightly and gaily (always admitting) ingeniously propose such a practice, without the relation of a *single* experiment to support him; for I hope the reader will not be ready to accept the expression, that he *has always obtained a perfect rouissage in less than three weeks*, as the recital of experiments, or even of a single trial; yet is that expression the only one, that gives the least idea of the Abbé, having ever made an approach towards an experiment upon this extraordinary pro-

posul. Some readers would be a little inclined to think, that he never did make any *regular* experiments on it; because they will be apt to suppose that some precautions, some attentions unlooked for, some varying results to be guarded against, would have arisen in actual experience, which must necessarily have called for more details than five of his pages would contain. It is fair, therefore, to consider it pretty much in the same light, as theory newly proposed; and it cannot escape any attentive reader, that the diffusion of water equally through the mass of putrefying hemp, must be abundantly a different corrector of that heat, which is the result of fermentation, than the confinement of the air generated by it, so as in all probability to make an effective difference in the result: I should, from theory, suppose, that letting water into one of the Abbé's holes for rotting hemp, would save his crop, and give him something instead of nothing: This, however, is theory—for I have made no experiments upon it; I wish the learned author had given more reason to suppose in the recital of them, that he had made some.

The third part of the Abbé's memoir upon the preparation of the hemp, does not contain any thing new, or interesting. It is very short.

The next memoir is, that of Mons. Prozet; which he divides into four parts, for the four questions

tions of the society ; under the first, on the theory of watering, he gives the following experiments :

1. He boiled the bark of hemp in distilled water, and repeating the decoctions, evaporated them ; the extract turned vitriolic ether yellow. 2. The hemp of the preceding trial dried, and placed in vitriolic ether coloured it slightly ; the solubility in water of the matter contained in the bark, proves it to be gummy ; and the colour given to ether, that it is resinous also. 3. To discover the proportion of the two, he digested 2 ounces of the bark of hemp in rectified spirits of wine, and obtained 48 grains of resin, which dissolved in vitriolic ether, with a fine yellow colour. 4. The hemp was then submitted to different decoctions, evaporated, and gave 86 grains of a gummy extract. From these trials he deduces the theory—that the water in which hemp is macerated, introduces itself into the vessels that contain the gum-resin ; the gum then takes the fermentative motion, and the fibres are easily separable, but the resin not being susceptible of the same fermentative motion, remains deposited upon the fibres which it colours. 5. By a hydro-pneumatic apparatus, he obtained the air yielded by the fermentation of the bark of hemp from the gum, and found it the chalky acid gaz, or fixed air. 6 and 7. By these experiments, he proves his assertion, that the *resin* of the hemp is not susceptible of fermentation. In addi-

tion to these trials, he explains very well the mechanical manner in which the fermentation destroys the cellularly tissue of the plant.

In reply to the second questions upon perfecting the practice of watering, he remarks, that it must necessarily be by employing an agent—in addition to water, which is the only solvent of the gum, which shall act at the same time upon the resin, and thinks it obvious, that a fixed alkali must be that agent, which by combining with the resin would form a species of soap, soluble in water, and consequently removable. In effect, he observes, that the experiment of Dr. Home, on flax prove it; these he repeated on hemp, and found them to succeed equally. In his 8th experiment, he makes the essay by watering hemp on this principle, and succeeds. For the application to practice, he observes, it is impossible in running waters, but not at all difficult in pits, made for the use, by the addition of a lye made of ashes, or by quick lime. He concludes, that 1lb. of pot-ash, and 1lb. of lime, would be sufficient for 200 pints of water.

Under the third question, he decides absolutely against the operation in the air alone; and of stagnant and running waters is in favour of the latter, because the fermentation is not so likely to be too great, so as to alter the constitution of the cortical fibres themselves.

Under

Under the fourth question, he observes, that it is impossible to prevent the bad odour of a fermenting body ; but the best means of escaping them, would be to use water sharpened by caustic alkali ; but the true practical method is the use of running water.

The third memoir is without a name, but said to have merited the praises of the Society ; it contains nothing to merit particular attention.

The fourth is by Mons. de Pertuis, and is entitled *instruction familiere*. He states the *whole* consumption of France to be between 3 and 400 millions of pounds. And we find, that near Meaux, there are men appointed for watering hemp by the public, who are well instructed by long experience. — As to the chief part of this paper, it is what its title imports ; but instructions at present in any part of agriculture, are with very few exceptions useless. The thing wanted of an author, is not to tell the readers what he should do, but what he, (the author) has done himself. But it is so very easy to write instructions, and so very difficult to make experiments, that the one method will very often be employed, and the other very seldom.

The merit of all these papers taken collectively, is not considerable ; the only point of importance in which we are instructed, is the existence of a resin, as well as the gum, which was universally known : in point of practice, the application of alkalies

kalies is not new ; and except that, I know nothing brought to light, which common methods did not before teach ; as to Monf. l'Abbé Rozier's dry method, it is to be confidered merely as a propofition for trial ; and it does not appear to be a promifing one. Merit, however, there certainly is ; for there are experiments, and thefe are never made without fomething ufeful, being the refult ; if, but a fingle ftep, and that a fmall one is gained, it is at leaft a ftep, and it is by fteps only that we can advance.

MINUTE OF THE EXPENCE AND PRO-
DUCE OF HOPS, AT STOWMARKET,
IN SUFFOLK.

Expences.

| | £. | s. | d. |
|--|----|----|---------|
| S TOCK, 25l. for poles, the } interest of which - - } | 1 | 5 | 0 |
| Rent - - 2 : 0 : 0 | | | |
| Tythe - - 1 : 0 : 0 | | | |
| Rates - - 0 : 14 : 0 | | | |
| | 3 | 14 | 0 |
| Rent total per annum - - | 4 | 19 | 0 |
| Three load of poles, at 22s. annually | 3 | 6 | 0 |
| Manure, four loads a year - - | 0 | 16 | 0 |
| Labour - - - - | 3 | 10 | 0 |
| Carriage of poles and sharpening - | 0 | 3 | 0 |
| Picking 6 Ct. and drying, and cart- } ing, 10s. per Ct. - - } | 3 | 0 | 0 |
| | | | Bagging |

A G R I C U L T U R E. 371

| | £. | s. | d. |
|--------------------------------------|-------|----|----|
| Bagging - - - - - | 0 | 3 | 0 |
| Kiln - - - - - | 0 | 5 | 0 |
| Duty, at 1d. and 15 per cent. - | 3 | 4 | 0 |
| Carting to Sturbitch fair, 1s. 6d. - | 0 | 9 | 0 |
| Fences and draining - - | 0 | 10 | 0 |
| | <hr/> | | |
| | 20 | 5 | 0 |
| Interest of that sum - | 1 | 0 | 0 |

Produce.

The price has been as follows :

| | £. | s. |
|------------|----|----|
| 1782 _____ | 4 | 0 |
| 3 _____ | 6 | 6 |
| 4 _____ | 6 | 6 |
| 5 _____ | 5 | 10 |
| 6 _____ | 5 | 10 |

Average, suppose £5.

| £. | | | | £. | s. | d. |
|---|---|---|---|-------|----|----|
| 6 Ct. at 5 | - | - | - | 30 | 0 | 0 |
| Expences | - | - | | 21 | 5 | 0 |
| | | | | <hr/> | | |
| Profit | - | - | - | 8 | 15 | 0 |
| Replenishing may be reckoned $\frac{1}{16}$ th annually | - | - | - | 2 | 0 | 0 |
| | - | - | - | | | |
| | | | | <hr/> | | |
| Remains | - | | | 6 | 15 | 0 |
| Still to be deducted for a farm im- poverished by the manure being taken for hops | - | - | | 2 | 0 | 0 |
| | - | - | | | | |
| | | | | <hr/> | | |
| Neat profit | - | - | | 4 | 15 | 0 |
| | | | | <hr/> | | |

Where they pick latest, are the best hops next year.

There are near 200 acres of hops in this neighbourhood. The labour of which, amounts to about 7l. an acre. They are spread in the following proportion, through these parishes.

| | | |
|---------------|-----------|----------|
| In Stowmarket | - - - - - | 50 Acres |
| Combs | - - - - - | 30 |
| Newton | - - - - - | 20 |
| Dagworth | - - - - - | 8 |
| Finborough | - - - - - | 20 |
| One-House | - - - - - | 20 |
| Shellan | - - - - - | 5 |
| Buxhall | - - - - - | 15 |
| Stow-Upland | - - - - - | 10 |
| Haughley | - - - - - | 8 |

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Yet, the poor rates are high in some of these parishes.

| | | s. | d. | |
|---------------|-----------|----|----|-----------|
| In Stowmarket | - - - - - | 7 | 0 | in the £. |
| Combs | - - - - - | 5 | 0 | |
| Newton | - - - - - | 4 | 0 | |
| Dagworth | - - - - - | 2 | 0 | |
| Finborough | - - - - - | 2 | 6 | |
| One-House | - - - - - | 1 | 0 | |
| Shellan | - - - - - | 1 | 0 | |
| Buxhall | - - - - - | 2 | 6 | |
| Stow-Upland | - - - - - | 4 | 0 | |
| Haughley | - - - - - | 2 | 6 | |

E R R A T A.

P. 326, l. 8, for fattened, *r.* finished; p. 331, l. 4, for different, *r.* difficult.

A N N A L S
O F
A G R I C U L T U R E.

A TOUR IN SWISSERLAND, IN 1786.

By Monsf. de Lazowski.*

THE road from Luneville † to St. Marie aux Mines is in an open country, but well wooded. The cultivation the same as in all Lorraine, except some portions of meadows on the Meurthe, which are inclosed for making the after crop hay. It does not appear, that they have sought to enjoy the benefit of the edict of inclosure.

Azerailles is the same as during the existence of its forge, high furnace and martinet : I have

* Knowing that my excellent friend the author of this paper had taken notes of his journey in Swisserland, I requested the perusal, and advised the publication, he very liberally desired me to do what I pleased with the MS. I present it to the readers of this journal, well assured, that they will find in it both information and entertainment, not to be had in works already published, on that interesting country.

A. Y.

† In Lorraine.

not seen a difference, and yet it should seem to me, that nothing could make amends for that loss.

The glass manufactory of Baccarat seems to go on well ; at least its magazines are emptied. There are three sorts of fabricks, plate-glass, called Bohemian, which seems fine, though inferior to that of St. Quirin ; common plate-glass for windows, and table-glasses. This manufactory receives its wood by the Meurthe principally, it has a canal some hundred toises long †, for security of unloading the wood for supplying water regularly to its pounding beams, and also for grinding and graving the glass. They say, that the consumption of wood is from 8 to 10,000 cords ‡, but it is more considerable, for I remember, formerly, to have heard it affirmed, on good authority, that they consumed more than 16,000 ; and it is a fact, that although the forge of Azerailles has ceased to work, wood has constantly augmented its price, and is, at present, enormously high. This fabrick exports nothing to foreigners, it is only for home consumption, and that of the islands.

It is the commencement of the *Vosges*. Raon L'Etape, at two leagues, is at the bottom of a small valley. All the north and the west of the mountains of the environs are peopled with pines, the other expositions have common forest trees. Raon is rather augmented than diminished ; its corn

† A toise is 6 feet 6 inches English.

‡ A cord, in Lorraine, is 8 feet long, 4 high, and 4 broad ; the foot 10 inches, and 9 lines French.

markets are considerable, and it is the entrepôt of planks, and of wood in general, which come down the river. This is the only navigation of the Meurthe, though susceptible of a greater navigation, as we may judge from the small part of the canal, made at Baccarat, and by the different flanks for the use of the manufactories and mills upon its banks. Raon then might become the entrepôt of the commerce of this part of Vosges, which, like the rest, is carried on in carts, and certainly the country would gain by a greater consumption, without the commodities augmenting in their price.

The soil, to within a league of St. Diez, is moderate; there is much red sand, extremely fine, and without fertility.—The situation of St. Diez is agreeable. The valley is enlarged: The new town, which is without comparison the largest, is well built. There are some manufactures, and it is the entrepôt of commerce of the higher parts of Vosges, and of the upper Alsace by the route of the valley of Liepvre.

The road to St. Marie, is much of it picturesque; it traverses the mountain, but I could not enjoy it, nor take any information, St. Marie aux Mines is pretty considerable; it was declined; its mines yielded no more, and the undertaking had been almost abandoned, but, at present, there is more activity, and it is the same with the mines of St. Croix, and of the valley of Liepvre.

We have been told, that the preceding company had an interest to decry the work, in order that the mines might be adjudged to them at a low price, or for nothing. There might, perhaps, be something in this, but it could not be simply the truth. 1st. Never since Duke Leopold have these mines been advantageous. 2^d. They had been divided in actions, which were decried, and not only lost much of their value, but were reduced to nothing. The works employ about 400 men. I have not seen these mines, and can trust, but to a certain point, to what has been asserted. It is certain, that at St. Marie, silver was the principal object; and they extracted it from all the lead and copper: It is the same thing at present, they assert, that upon a quintal of lead, they extract two pounds of silver, and that the undertaking is advantageous in the hands of the Duke of Deux Ponts, to whom it has been abandoned.

They burn only charcoal, although there are two mines of coal open, and worked in the valley of Liepvre; the bed, they say, is three feet thick: It would be rich, but activity is wanting, not only because they could transport it only by land-carriage, and that then it would answer only to the nail-makers and smiths, but because they are ignorant of the method of using it in the manufactories. This coal is good, although sensibly lighter than that of England. It is here that the necessity of navigation

tion is felt: Without that, it will be impossible ever to render the use of coal familiar and easy in the province, and further, it is the means of export that can alone give to the soil all its value.

The environs of this city are very fertile, and in general, the inhabitants, as in the rest of the Vosges, are proprietors. The goodness, and the high produce of meadows, is attributed principally to the goodness of the water. It is excellent in this city. But what is the quality of that which fertilizes the most—from whence it takes its course—how long it has run in that course—what is the exposition? &c. &c. These are points important to ascertain; but I have not been able to do it.—In general, the water is introduced in the spring, after the melting of the snows, towards the end of the month of March; they keep it for a month or five weeks, when they draw it off, and introduce it anew; immediately after cutting they water again, and continue it till the second cutting.—The product is almost doubled by the irrigation, according to the soil and the quality of the water; an arpent of Lorraine, gives 2000lb. and one load of the second cut, which sells at double the price of a load of the first, on account of its weight. The second cutting is employed only for horned cattle, and they assured me, that it fattens the beasts quicker. This after crop is that produced by the irrigation. The oxen which have been upon their pastures, during the summer,

want only six weeks, or two months, and sometimes less, for being fattened : but in the last week they are finished with oil-cakes, without regarding the grain from which they are made : they assert further, that the first hay fattens much less quickly than that of the second cut. What has appeared to me well ascertained is, that it is so much more profitable for cows, that it is sold for more than first cut hay. The fattening oxen eat no corn.

Their pastures are of several sorts. *1st*. Their commons, of which the quality is sometimes excellent, and which in general are of a large extent. *2^d*. The woods, in which the communities have often the right of common pasture ; and *3^d*. The arable lands, which sometimes are left at rest for many years together. These pastures are most commonly on the flats of the mountains, and at a distance ; and many cultivators being of opinion, that the walk which the cows are obliged to take makes them lose their milk, and does them more harm than good, keep them in the house, and carry them fresh grafs, and find it much better ; as it augments the dung, of which they have an absolute want.

Except their meadows, which they water, and in the irrigation of which, particularly the levelling, I am not satisfied, they are poor cultivators, and not to be praised ; but in a single case, in their ordinary lands, they do not commonly sow spring-corn
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after their wheat, and for obtaining it they dung : after that, they put in potatoes, and then oats or rye : Next spring rye, which is of as good a quality as the other ; and, in fine, they sow till the land is almost entirely exhausted ; then leaving it to repose for many years together : an execrable system ! They pretend, that they could have a crop every year with dung ; and, nevertheless, they are without intelligence to increase it. They leave it even to be washed by rains, and the drainings lost.

They have experienced, that the water which has been left some time upon arable lands, gives them strength and food. I have already heard this point discussed many times, and heard it asserted in England, that corn might be watered with advantage. This is an experiment to be tried.

They sometimes plough their commons, sowing them with corn, to advantage ; but for cleaning the land, they plant them with potatoes the first year, which is excellent, and sow wheat after.

The difference of soils in this part of the mountain is enormous ; a journal of land in the environs of the city, sells to 400 livres of Lorraine, and at some leagues distance it brings only three louis.

The road by the valley of Liepvre is charming. The pictures are as varied as they are agreeable and multiplied. They have not, perhaps, that air of imposing grandeur, which characterises the mountains, but they have all a richness of coup d'oeil,

a gaiety, and, above all, a life which have pleased me extremely, and which I like better than some parts of the Alps in our Dauphinè.

The country is rich in manufactures, and in productions exported. It wants, 1st. A navigation at the foot of the Vosges by the Meurthe. 2^{dly}. The use of coal in some manufactures, and, above all, the lights of agriculture: principally, in the theory of dung, and in the introduction of artificial grasses, which would extirpate their abominable method of fallows, and bring them at the same time to augment their cattle; for if hay is wanted, all is wanted; witness the last year, when they were obliged to kill a part of their cattle.

At the bottom of the mountains, you descend into the rich plain of Schelestat, occupied for the greatest part by vines cultivated in the Alsace manner, or to speak better, all the strong lands produce great and high seps, as in La Bresse, &c.

From Schelestat to Newbrissack, and in the Sungaw in traversing the plain of Colmare, I have seen, with pleasure, that the improvements had converted a considerable extent of moderate soil into arable land, and, in truth, had trebled the value. Without stopping, I saw a great amelioration in their culture; it is the introduction of clover; they cut it twice, and I have seen some two years old, but do not know if they sow it as an improvement of their course, by sowing their wheat on it upon one ploughing.

ploughing. They have also beans but taken instead of fallows. Are they cultivated by the plough? That which merits observation is, that the staple of their land is gravel and flints with a bed of loam, dry and sandy, not deep, a soil which is not advantageous for that production. They sow turnips, and I have seen fine ones much too thick, now they have assured me, in Lorraine, that it was impossible to have them, and they are obstinate upon this impossibility. They hoe them, but badly, lightly, and fearing to loose, by destroying the plants where thick. Their ploughs are bad, and they use three horses; a thing inconceivable to me who have seen good ploughings given in other parts of Alsace with a single horse.

The road is dull: It would have been very fine if it had led nearer the Rhine.

The territory of Basle begins at a league from that city, and although the soil becomes better, which cannot be attributed entirely to cultivation, which is nearly the same as in Alsace, nevertheless it seems to me, that I find in the apparent prosperity of the country, something to confirm the truth, that general prosperity follows, the circumstances being the same, nearly the degree of liberty. Alsace is better than Lorraine, and Basle is better than Alsace. It is not by the number of country houses, which ought to be frequent and which are so, in the environs of a rich city, in which the inhabitants

habitants have the simple and republican manners, by which I judge of the degree of its prosperity. That sign often deceives in a monarchy ; it proves luxury and a great inequality of fortunes ; but the strength and the prosperity of nations can only exist in the ease of the people and the culture of their lands. It is, therefore, by other signs that I have been able to examine. It is in the apparent riches of the farm houses, it is in their ornaments, which prove that the citizen is at his ease, and that the farm is his retreat and his pleasure ; a fact which has been confirmed at Basle. It is the multitude of houses of every kind which tells me that the number of citizens, which can allow themselves the pleasure of the country, was great, and that the competition for becoming proprietors was great ; a fact, which carries with it the idea of a mass of capitals employed.

Much has been written on Swisserland : I was not there long enough to multiply observations ; and as I find so much in books concerning it, I have the less to minute, writing as I do only for myself ; but as I have observed, perhaps, some detached facts, which have relation to some leading enquiries, I shall limit myself to them.

At Basle, as in the other Swiss republics, there are sumptuary laws, and they are kept like other laws, exactly to the letter, but they are null, because luxury employs itself upon objects, which the laws have

have not foreseen, and could not foresee. I have, therefore, been more confirmed in the opinion, which I had formed in England, that manners were the only effective laws against luxury, and it would still remain a subsidiary question to know if luxury is not the vehicle of commerce in whatever states are supported in a great measure by their manufactures.

1st. Since luxury is relative to the circumstances of the times, above all, to the advancement of the age, of circulation, of the situation, and the condition of the neighbouring nations; it is evident, that the laws ought to vary in respect to all these circumstances: For, that which was luxury two ages past, is but mediocrity at present: and is it not a thing contrary to the spirit of a popular government to have a principle of legislation, which tends by its nature to lead to disputes, to oblige the legislature to weigh perpetually in a ballance, opinions alone, what may be prohibited, or permitted. and to develope commotions, of which the popular government have always a principle.

But if the republican manners recal the order of which the dissensions are removing, then manners will be the rampart against luxury; and if they are not so, the citizens will prefer their enjoyments to the enthusiasm of the republic, and will make every effort for preventing the introduction of new sumptuary laws. It will result then, that they will have for these laws, the same respect as for other laws,

laws, they never alter or correct them, and then by that alone, it is clear that those laws are void.

2dly. They are null because luxury exercises itself in cases not foreseen; thus, at Basle, if it is prohibited to wear clothes of silk, they take those in which there is a little mixture of cotton or thread, or wool. Thus coaches are become common, though it is prohibited to have footmen behind; they open on the inside, as with the physicians at Paris; and although the population of the city does not exceed 13 to 15000 souls, yet they reckon more than 200 coaches, and are costly in the choice of their horses. The ladies cannot be dressed in silk, unless it be black, but the law has foreseen nothing of the head-dresses, and nothing can be more contrary to the spirit of reformation, than the parade of their heads, which they run into as much as in France; and the expence of gauzes is certainly greater in the end than that of laces.

3dly. In short, it is impossible to place bounds to the enjoyments of a rich people. It is not luxury which corrupts, but riches. It is these which give consideration and distinction, and, nevertheless, the principle of a popular government is to reinforce the means of becoming rich, in assuring to every one the fruits of their industry and their property, and in preventing idleness; without giving in employments and abuses the means of subsisting by doing nothing. This exists admirably at Basle;
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and at the same time they would destroy the principle by sumptuary laws; for they would limit enjoyments, though men labour only to enjoy: thus, besides the examples which I have given, it is clear, that if the law prohibits to have more than four dishes at dinner, it can place no bounds to the choice; and if furniture is not magnificent, they can have pictures of the highest price; from all which it appears, that the laws can place no real barriers against luxury.

Manners alone are the true obstacles to it; here I can only develope the ideas which I have acquired elsewhere—but it is true, that at Basle, they are still simple and mild, but they move towards the level of their riches, and of the rest of Europe. Prostitutes are known, and kept there under different pretexts; such a fact is something.

But that which I have seen, heard, and observed in general, at Basle, with the most pleasure, is the action, and reciprocal re-action of letters on the democratical manners. The youth are educated at the university: of whatever state the parents may be, their children are well instructed; because, being a part of the sovereignty, and eligible to be a part of the government, it is necessary they should be instructed, and instruction in literature comprize the Greek and Latin authors. Those authors having their minds animated by the influence of republican education, even to enthusiasm, it results,
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that this continued reading gives a new force to the love of liberty, a new intensity of the sentiment of their superiority to other people ; and, in a word, that enthusiasm which reason does not always justify, but which enchains and subdues men who are even in a different situation.

This education produces another effect, it gives the taste for letters, for retirement, and for employment ; and thence it still serves, perhaps, more to further the republican spirit than by its first effect. It removes subjects of dissipation ; it renders home agreeable, and maintains that simplicity of manners—that manly and nervous turn of mind, which knows how to appreciate the good, and to avoid the trifles of life : and it is this simplicity of manners, this love of retirement, this contentment with home, this inutility of dissipation which makes, properly speaking, the soul of a republic more still in my eyes, than knowledge if it was possible to separate them.

The study of letters in a republic, perpetuates, therefore, the love of its liberty ; it produces, it is the cause of manners analogous and necessary to such a state, and by an admirable re-action, these manners, in their turn, give a new taste for letters where they are cultivated, not by necessity of occupation only, but as an agreeable relaxation ; and if this happy habit, this turn of mind, is not always that which we should call amiable, it renders
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men simple and mild, and their minds become more in unison with the form of government which they love.

This had been proved to me during my residence in England; and every man who would read with some attention, the works which are published there, will recognize the pencil and the turn of the antients.

What I have said is confirmed by facts which are so extraordinary in France, that they will be thought incredible; we have seen the third magistrate, (the treasurer) who is a baker, who still sells bread, and who amuses himself with the study of the Greek and Latin poets. A butcher, also, has been named to us, who stirs not to go to a fair for buying cattle, without a Greek poet in his pocket. It is a spectacle interesting enough, that there exists such a taste, and two examples of it prove more than any thing I could say. It seems, by the spirit of laws at Basle, that they would establish in favour of the citizens, at the time when the republic was formed, a sort of general and perpetual entail, of which the effect ought to be the same as that of common entails. Not only none are citizens, except the descendants of those who formed the republic, but it is impossible to inhabit Basle without permission, and to become a proprietor of land within the extent of the Canton; that none can become a citizen, appears to me simple in a democratical

cratical government: It would render the sovereignty communicative, and with the jealous, interested, and ever selfish spirit of that kind of government, I do conceive it; but am not able to conceive, how an individual, when he has obtained permission to reside, has not that of becoming a proprietor. It is to remove competitors—It is, as it were, a monopoly of the citizens against themselves—It is to contract the line of extending the principles of competition and of industry;—and in one word, it is to destroy the most certain effects of a free government. It is true, that after a long habitation, permission is obtained of buying a house, but besides its being necessary to depend on the favour of the great council, it is only an exception to the general prohibition of buying. I note particularly this law, because its effect is striking. An arpent of land in the districts, least sought for in the interior of the city, costs only 3000 livres, and about 10,000 in the other quarters, and this in a city, free, rich, and manufacturing, is little to pay for building ground. Estates in the country are sold at 25 to 30 years purchase; and it should be remarked, that they would not be so dear if they were not prevented from purchasing in Alsace by the effect of our ruinous forms; and secondly, that in the Cantons, where they pay neither the seal nor the hundredth penny, nor any thing that increases so much the price of acquisitions in France.

France. It seems to me impossible to produce more characteristic effects of a law, especially if we take into our calculation every circumstance that ought to enter into it.

In spite of the removal of the citizens for acquiring without their territory, they have some possessions in Alsace, in the Margraviate, and in the empire in general. They become more curious in agriculture, and, in Alsace, they have introduced the use of clover for artificial meadows, which will operate in a short time a considerable change. They harness their oxen in collars, and gain by that means a greater degree of quickness in their labour. They have turnips which they do not cultivate well. They have moderate ploughs, with which they labour much better than could be expected; but as in the part of Alsace, which we have traversed, they harness too many oxen, and make the extraordinary and superfluous expence of a driver; a thing which appears incredible with the example of some cantons of Alsace, where I have seen them plough with a single horse. Their meadows are well managed, and I have been assured, that they have a powerful manure in Plasterstone, or Gypsum, not burnt, but pounded to powder ||. An intelligent person, who cultivates for his amusement, and as an amateur told me, that the effect was astonishing upon clover, and in ge-

|| I hope I shall hear from R. S. upon this subject; it is an important one.

A. Y.

neral much greater upon light than upon strong lands ; it is so sure, that slight failures must not disgust. This is a thing to try.

They have at Basle, both commerce and manufactures ; they have of the latter, many objects in the city. It is also an entrepôt for the commodities drawn from foreigners ; in which the English haberdashery is a great article. I speak of this only to have an opportunity to touch upon a *gasconade ba-loise* : They pretend, that they manufacture ribbons to the amount of eight millions of our livres, which is the third part of the whole fabrick of Lyons ; and such a sum, for this article, appears to me not only an exaggeration, but an absurd boasting in our neighbourhood, whom they cannot rival either in taste, or the choice of silk : and though they introduce their ribbons into France clandestinely. I know, that they fear in good earnest, not to be able to stand against our fabricks, which they will be able yet to do a longer time than the circumstances would seem to allow them, on account of the extent of their capitals.

At Basle, as in all the free states, the voluntary charities are numerous ; by them are maintained, in a great measure, the house of orphans, in which are kept the men condemned to prison. There is a gradation of punishments in the criminal justice of this city, which is perfectly ordained ; simple fines, imprisonment, with labour ; imprisonment, and public works, for a time longer or shorter, but always

ways limited : the gallies of France to which they send their condemned, without any contribution to the expence, the pillory, the whip, and death. It has not appeared to me, that this part of their legislation was perfect, they have preserved the torture. The little council has refused the abolition under the pretext that it might be useful in extraordinary cases : a reason, absurd and incredible in a popular government.

We find every where the manner in which civil justice is administered, but we are not so commonly told the way in which they settle their mortgages. The security of the lenders, when they have not their only confidence in the person, and the character of the debtors, exists in a public act, and the priority of this act. The difficulty then is to assure themselves of the priority of such act ; in France, for example, nothing prevents the same estate being mortgaged many times, without there being the means of knowing how many times, and in what order, it has been so. Here, when a citizen would borrow, he indicates the fund, which he proposes as the security, and this fund is registered, and it is valued, and if the estimate goes to twice the sum borrowed, the officers charged with this function ratify it. It is necessary, that the estate proposed be of twice the value of the sum borrowed, because the tribe, and in general the public answers for the security. By means of this precaution, mortgages

are secured. They are fond of this form at Basle, but as to me, I do not know what to say of it, it might be useful, perhaps, in a state wholly agricultural, although not without difficulties: but in a commercial state, in which there should be great facilities of borrowing at the risque of some frauds, this form seems rather mischievous.

I have seen at Basle, two objects which have fixed my attention; the one is the manner of printing geographical maps with characters. This method is not better than by wooden plates; it does not appear even to be exact; it is impossible, at a simple view, to vary enough the form of the characters for giving the variety of contours, and the multiplied forms which exactness demands: It would be necessary often to cast the type *isolè*, for being correct: in other words, it would be necessary to cast particular types for each map, or 1°. the fixed characters upon the rules of the Mosaic, and in a strong case can serve but to draw a certain number of copies, for they are too voluminous, too much exposed to derange themselves for being warehoused, an inconvenience not attending engraved plates. 2°. Although they should perfect these characters, never will they find them reach the perfection of the graver. This invention, however it may prove the genius of the artist, seems rather to place bounds to the art, instead of advancing it.

The second object is a curious discovery, and which may be employed to the satisfaction of the
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lovers of electricity. It is a barometer of an extraordinary kind; A curè, short-sighted, who amused himself with firing at a mark, had thought of stretching a wire in such a manner, as to slip the mark on the wire, in order to draw it to him, to see how he had aimed. He observed, by chance, that the wire sounded sometimes, and gave a sound as if it had been oscillatory; and he had observed, that this phenomenon happened, when a change in the atmosphere was to ensue, so that he came to predict, with exactness enough, fine weather or rain, and himself to be regarded as an extraordinary man. M—— has multiplied observations, and has found that this extraordinary barometer is more just, and more exact, and more marked in its sounds, when the wire is extended in the direction of the meridian. He told me, that the sounds were more or less soft, more or less continued, according to the future changes of the weather, more or less marked. It did not appear to me, that his observations were multiplied enough for classing and reducing the phenomena to marks, sufficiently precise. He pretends, yet, that the sounds of counter-tenor, announce fine weather; and those of the bass, rain. But, I believe, they are sure only to a certain point. It is sufficient to the principal phenomenon, that it occurs, and it seems to open a new career, in which observations have already been attempted. The professor, Volta, has mount-

ed at Pavia 15 cords, and it is said, that the symphony is agreeable enough. It lasts more or less time, yet without there being any signs which indicates what will be the duration.

The Rhine is superb: it runs in a valley which seems narrowed on the side of Anterior Austria; The lankskip of the environs is delicious, and I should advise for enjoying this view, to go upon the square behind the cathedral, where also is seen a charming view of the house of Mons. de ——— who has one of the best and most precious collections of pictures I have ever seen.

From Basle we went to Arlessem, the seat, at present, of the Chapter of Basle, or of the Bishop of Porentru; our object was to view a sort of English garden, made by Mons. de L. canon of the chapter. He received us like a person used to good company, and did the honours of his garden without affectation, and with ease. I have already gone through a part of St. Godard, and traversed the delicious valley; I cannot, therefore, judge well of this garden, the impression which remains of it is weak, and, in truth, the most superb particular situation can be but an object of light attention, and of a remembrance which leaves hardly a trace. I can, however, say, that its principal merit consists in the choice of the situations for repose, which, by their contrasts, are striking and agreeable enough: also in some natural accidents
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of rock, of which he has profited, from which he has removed the earth to form grottos, and astonishing excavations. Perhaps one might say, that the decorations of an opera, figure in these grottos. Such as the temple of Proserpine, of which they have made a collection of prints; they do not accord with the manly beauties of nature which surround them, but we must remember, that this garden is destined to be a place of feasts and amusements, which they are desirous of always having there for the ladies; we find, therefore, a course of rings, a swinging seat, a ballance, a hall for dancing, a nine-pin ground, &c. to which the country people are admitted; on sundays and festivals the spectacle must be lively and very agreeable. As to the rest I ought not to pass in silence, that it is a benevolent and enlightened charity, which has been the cause of creating this garden. Monf. de L. was willing two years ago to assist the poor inhabitants in their distress, and it was by providing them work that he has given that assistance.

From Arlessem to Lauffen, where we slept, the road is agreeable, it follows a valley which is often narrow, and which forms meadows, extremely well kept, all irrigated, which they are about to cut for the second time, and of which, the carpet of a delicious verdure contrasts wonderfully with the darkened shades of the firs that cover the mountains.

The road all agreeable as it is, is only a sort of preparation for that which follows it, and which seems in effect to want that preparation.

We are here in the lands of the Bishop of Basle. It is a canton more of cattle than of cultivation, where they rear many oxen, which they fatten and send into France. The number of cows is considerable, but all the cattle are of a moderate breed. They have given me for a reason that great cattle cannot support themselves, but with difficulty, upon the pastures of the mountains, that they lose much time, and fatigue themselves beyond measure, in being driven every day to the pastures, and back again in the evening to the stables. This system, which is not general in the mountains, properly speaking, that is to say, in the Alps, is the single one that is known in the parts where we are. They have some cattle of the large breed, but they keep such all the year in the stables, and carry them their food fresh cut every day. The cows kept thus, lose less, and give more milk. They have those which give to 32 bottles in a day, but this is very rare. It is not always the largest which gives the most milk; but I have not been able to procure information of what are the characters, and the particular signs in the form which they allow to be the marks of a good milking cow. I wish also to instruct myself in the characters of an ox, that is to say, which would be best disposed to fatten, but I wished in vain.

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They are in general fattened with hay, with second cut hay and with corn. We have been told, that the second cut alone heats them too much, that it was, nevertheless, better than hay alone, but mixed, it was better still. I have only a certain degree of confidence in that information. They have employed also potatoes with success, but it is in a manner different from what has been done in England. Every day they give, at three different times, half a bushel, to each, of the potatoes, cut in thin slices; a potatoe is not cut in more than three, and they give them to drink after; they then give a small portion of espiot in the chaff, or of wheat, and hay again of the first and second cut. They say, that the oxen profit much by this regimen, which does not surprize me.

They give the rave or turnips only to cows or to pigs; they have not enough of them for the oxen; this culture, and the employment of them, nothing to be compared to what is common in England.

They employ in their ploughs and in their carts only oxen, but they harness all, without exception, by the horns, and they draw but small loads; they go, it is true, in roads very difficult, and which seems to be almost perpendicular; but although I cannot affirm positively, it appeared to me, that if they were in collars they would draw with more ease, and might equally go every where, and the proof is,

is, that they labour more quickly and with greater strength harnessed in that manner, in other countries.

A good common cow costs seven louis'd'or; a pair of lean oxen eighteen; but cattle are dear at present

The arpent of meadow sells, near the villages, to 1000 livres, but it is of a good staple, and which sometimes receives the waters and the drainings of the village. Other lands are worth down to 300.— This is cheap. The people seem not at their ease. They are badly cloathed. Their dwellings do not shew any species of convenience. There are, however, some countrymen pretty rich. Upon the whole the difference between these people and those in the Canton of Basle appeared to me considerable.

From Lauffen we took the road of Delemont, the summer residence of the Bishop of Porentru, from hence, by the valley to Moutiers Grandval, and following the same valley we have descended the chain of Jura, which prolongs itself further to meet the plain of Bienne upon the lake of the same name. This road is not that which is commonly taken by travellers, they go from Basle to Schaffousen, and return by Berne and the Valais, after having seen the interior and the small Cantons, taking Bienne in their way, to or from Berne.— It is the same thing if they begin contrarily, and finish at Basle. In both cases, in examining the Travels through Swisserland, and in consulting the map,

map, we see, that the road which we have taken, makes an elbow, and, therefore, one may take it as a particular excursion, but it occasions the loss of time in a general tour. Every traveller hurries to the Alps, not believing that he can leave behind him any objects worth retarding his progress. We should have done like others if we had not been willing to go to Soleure in three days, and to employ the time in going to Bienne, to avoid returning any more on our steps. Be that as it may, I should advise every curious traveller, and admirer of the beauties of nature, to take that route, and to allow one or two days more, not only because the journey to Bienne is too great, but because it would be proper to stop in the route, in order to know the regimen of the country, and to be able to assign the reason of the difference between the lands of the Bishoprick and of those which he has seen and will see, for there is no effect without a cause, and those causes appear to me curious and interesting to seek for.

I return to our route—I have said that we were willing to arrive at Lauffen. The road was only a preparation for that which was to follow, and, in effect, it seems as if nature lead you on by degrees to the great objects with which she astonishes the observer. This road is a poem, of which the movement seems, if not regular, at least calculated to please, strike, and annihilate our little pride under

der the weight of the great works of nature. To Delemont the valley often picturesque, has yet nothing truly imposing : Some gay situations, set off by the fine masses of forest with which the mountains are cloathed ; meadows which border the road, and cut in a thousand different manners ; the verdure is delicious, and upon which the eye returns to repose itself with new pleasure : in a word, the picturesque of the groups, and of the novel situations common in the mountains, form a scene with which one would be already enchanted, if we were to go no further. But after having traversed the plain of Delemont, and a village called Corendenin, we enter in a ravine rather than a valley, dug by the torrent which rolls beneath the road, and it is then that the true romantic begins : I cannot better give a general idea than by saying, that it is the sublime model of the finest pictures of Salvator Rosa. One seems annihilated beneath the enormous height of the rocks, which narrow in and contain the road and the torrent, varying their forms to infinity, opening only to let cascades escape. This scene, which engages the more as it is more new, is not interrupted within a league of the village, but by the widening of the valley, and then you have the view of a landscape charming ; a noble rivulet which turns a mill ; houses, some agreeably situated ; some portions of meadow, and cultivated lands ; a milder slope of the mountains, furnished with fine woods, form suddenly

denly a charming view which was not expected, and the eye embraces at once, because all the objects are disposed upon an immense amphitheatre, which makes the back ground of the picture, and is not one of its least beauties. Further, in following always a very picturesque way, you arrive at a place where the rocks approach each other, where the torrent changes its direction in quitting the left and turning to the right; you pass it over a bridge half covered by two masses of rock which are naturally opened to the bottom; and all of a sudden you quit this sombre place, to enter an amphitheatre of which the chord may be 600 feet long. To the left the rock enlarges itself in an immense half circle, it has at least 400 feet of perpendicular elevation, and seems to have been dug by a mass of waters frightful to conceive. It seems as if you followed the current upon the rock; its surface is softened and polished by the friction of the waters. I may have deceived myself, but it seems written upon the rock in striking characters. All the interior of this prodigious amphitheatre is such as can be conceived only upon the spot. It is garnished with wood, the nakedness of the rock is interrupted by trees of a low growth, and some shrubs growing in the clefts and interstices. In following it still further, the scene only varies, but the aspect is not less sublime, and every hundred steps you see, and hear the noise of currents that fall.

fall in cascades, which have carried with them portions of the rock detached by the frosts, leaving buttresses of rock as if to support that immense wall; laying bare openings and immense clefts, and the top of this superb edifice is a sort of wall of perpendicular rock, which seems to menace the passenger with its fall. I seek to recal to my mind for the future what I have seen, but I know the impossibility of describing it to my friends. The variety, the sublimity, the imposing grandeur, the effect of the lights, the groupes, the masses of trees, and the verdure, forming a spectacle beyond what the most fervid imagination of a great painter can ever figure to itself.

This scene continues for many leagues, but finishes short of Montiers Grandval where we dined. This little town is clean, well built, and apparently easy.

From thence we traversed parts where the culture seems pretty well understood, and the farmer more at his ease; we see for the first time houses all in wood, extremely neat, and very well lighted, but I would wish to see many before I speak more of them.

At a quarter of an hour from the village of Tavennis, it is necessary to make a detour for going to see, at the foot of the mountain, the source of the Birs, which throws itself into the Rhine above Basse. This source is fine, it turns a mill exactly
below

below it. The water is excellent. It gives motion to a quantity of manufactures, and serves for the irrigation of some meadows. They often impede its course for raising the level of its waters, in order the more easily to conduct them at pleasure.

Still further we traverse the mountain by a passage dug in the rock by the Romans, named, *Pierre Pertuis*; a description of it is found in the *Dictionnaire de la Suisse*. I shall, therefore, only say, that the passage will not bear a comparison with the work executed by the last king of Sardinia, at Echelles.

In fine, you traverse Jura, and the route is truly majestic: it leads often on a precipice of great depth, excavated by a considerable torrent, which in the midsts of its course, forms a noble cascade, whose noise calls on the traveller to stop to admire it. You come to the platform, from whence the scene, in a fine day, is superb. In front, to the west, you discover the Canton of Soleure, and a portion of that of Berne. The high Alps, covered with eternal snows, bound the view. To the south, you command an immense plain, rich, and well cultivated; you have a bird's eye view of the town and lake of Bienne; the chain of small mountains, which separate that state from the principality of Neufchatel, &c. limit the view on that side.

Our

Our object at Bienne, was to go to the small isle of St. Peter, famous for the residence of Jean Jacque, but the wind was at south, and violent, so we were obliged to content ourselves with the view of the lake. The town has made a small public walk upon the banks of it; the view from it terminated, and enriched by the town of Nidau, and by the range of hills on the other side, covered in part with vineyards, with the isle of St. Peter in the middle of the lake, is interesting.

The town of Bienne is small, very moderately built, and, in appearance, not rich; and except some fabricks of no great importance, established some years ago, they have nothing of manufac-ture.

It is necessary to go and see a spring astonishingly abundant, and which they say, throws up some pieces of Roman money, and at a league further, a noble and lofty cascade, which in a fine day, well repays the trouble taken to get at it.

I am now obliged to return by the same way; not being willing to interrupt what was mentioned in the route, I shall now note some objects which should not be omitted.

At Corendenin, of which I have spoken, I met two marks to fire at, which gave me an opportunity of speaking with two cultivators. These marks serve for play and exercise on a Sunday. It is an individual who has undertaken it; he is paid 3 fous for

for each fire, at 300 paces distant from the place from which they fire, where there is a plank firmly fixed in the ground, knotted on each side to support the musquet, according to the height of the man who fires, placing his knee upon the ground. If you fire in the middle of the mark, and strike out the wooden peg fixed there, you obtain the first prize, which consists of a fork, spoon, goblet, and plate of silver; the second prize, is a complete cloth suit. It is uncommon to gain the prize, but it is a military exercise, which seems common, and which habituates the peasantry to fire true, and familiarizes them with fire-arms; they are all armed, and consequently ready to become soldiers.

The country has extended its culture but little. The plough is the same as that which I have seen till now. The share does not cut perpendicularly; but it is double finn'd, rounded, which cuts the earth horizontally. The mould-board is moveable; it is a plank with a hook at the end to enter in a ring fixed in the plough. This mould-board is strait, and consequently good for little: it is double; and it is evident, that they must plough badly with such an instrument. It is in use in France. It would be necessary to proscribe it for good reasons too long to deduce here. The staple of the soil is in the plain, a gravelly loam, naturally friable, and in which this plough has the fewest inconveniences. It is fertilized by manures, which appeared

to me abundant, and ought to be so from the number of their cattle.

Fallows are in use here, and seem to be a consequence of the common-field rights.

They sow turnips in their hemp-grounds, and among the hemp, after they have pulled the female hemp, they rise among the male hemp which is left, and increase in size, chiefly after the whole is pulled. This method has certainly considerable advantages, which may be calculated and adopted any where.

The cattle are not of a large size. The draft oxen are small, but strong and well made; they work them till eight years old, when they fatten them with second cut hay, and give also at twice a day, two *picotins* of oats, or about half a peck English.

Till here, I have hitherto seen but little art in the irrigation of their meadows. They are narrow, and the slope natural; there is, therefore, little other labour than letting in the water at the upper part, and making a small trench of 8 or 10 inches breadth, and varying the depth in such a manner that it may be full every where, and the water consequently overflow equally.

ON THE SMUT IN WHEAT.

By Mr. W. Macro.

DEAR SIR,

AT the conclusion of the account of my experiments on the smut in wheat, vol. vi. p. 246, I mentioned sowing some gleaned wheat as an experiment the next year. I here send you an account of it.

Nov. 1st, 1786, I sowed two bushels of wheat gleaned from different farmers lands, and of three different sorts, viz. the Kentish red, white velvet, and the old white stock. Dressed six pecks of it in my usual way*, and sowed the other two pecks dry. I examined it myself, and got others to examine it likewise several times last summer, till harvest time, and none of us could find so much as one smutty ear; and after it was cut and bound up, I examined the sheaves very carefully, and found not so much as one smutty ear in that which was dressed before sowing, and only one in that which was sown dry.

The same day I likewise tried the following experiments on a piece of land by the side of the above, and parted only by a small green border, manured the same, *by folding*. I sowed some of

* See note, vol. vi. p. 243.

my own seed without dressing it, in which, on the first examination, I found three smutty ears, and a few at different times afterwards, but it was not so bad as to affect the sale of it.

On a piece by the side of this last, and manured the same, I sowed a bushel of old wheat without dressing, likewise, which although sown by the same hand, the same day, and the same thickness as near as could be, did not produce more than half a plant †; which, however, was as clean from the smut as possible; for neither myself, my bailiff, nor the man that weeded it a second time after it was upon the ear, (for it required an extraordinary weeding on account of the thickness of the plant) could ever find one smutty ear, nor could I find one in the sheaves after it was reaped. The old wheat did not come up so soon as the new by about a fortnight. I have this year sown a small piece of land with old wheat that is a good deal smutty, without dressing it, and which I am inclined to think may turn out a clean sample likewise.

I am, &c.

WILLIAM MACRO.

Barrow, Nov. 20. 1787.

† I have sown old wheat before that grew very well, this possibly might get heated by laying thick in a binn on the granary.

P. S. The

P.S. The same day that I tried the above experiment, I sowed some of the white Charlton pease in my garden, in the hollows betwixt the ridges that were turned up for the winter; they turned out an exceeding good crop, but only three or four days forwarder than some of the same sort sown more than a month later, which was a good crop likewise; both were sown very thick.

EXPERIMENT ON THE SMUT IN WHEAT.

By the Editor.

Nov. 9, 1786. **M**ARKED twelve beds of good sandy loam, in great heart, on a clay marle bottom, and struck drills at one foot. Prepared the seed differently for each.

- No. 1. White velvet wheat, a year old, that was very smutty; no steep or lime.
2. Velvet wheat of this year, and very smutty, swam in brine, and limed.
3. Velvet-wheat of this year, steeped 24 hours in a steep of lie, arsenic, &c*.

* Made half a hoghead of strong lixivium of wood-ashes, put it in a cast iron boiler, with 7lb. of common salt, and 1lb. of arsenic; boiled it, and kept it in the boiler for use when cold. This is Mr. Andrews's steep, except the salt, which he does not use. See vol. vi. p. 174.

4. Ditto, ditto, 14 hours in the same.
5. Ditto, swam in the same steep, and limed and sown directly.
6. Ditto, washed repeatedly in common water till clean, then swam in the steep, dried with lime, and sown directly.
7. Ditto, merely washed well in common water.
8. Ditto, dry from the barn, nothing done to it.
9. Ditto, steeped in lime-water, made with hot water in the manner prescribed by Mons. Tefrier *, and dried with lime; then in the arsenic steep, and again dried with lime.
10. Ditto, washed in the same lime-water, and then dried with lime, as by Mons. Tefrier.
11. Ditto, steeped 12 hours in a pickle made of hot lime-water, to which the vegetable powder added of Mr. Brongniart, dried with lime.
12. Ditto, steeped 4 hours in the arsenic steep, dried with lime.

Sowed them November the 11th, the contents of each division a rod square. All the seed was exceedingly smutty. Very little of the old seed ever vegetated. The 9th of May I went to

France, and, therefore, besides leaving directions with my bailiff to note the result, I requested my friend and neighbour the Rev. Mr. Carter, to view them at the proper season, and minute the appearance. The following is a copy of his note.

July 26, 1787.

- No. 1. Ears fine ; smut inconsiderable.
 2. Very smutty ; far inferior to No. 1.
 3. Equal to No. 1. in smut ; and to No. 2. for growth.
 4. No smut ; growth as No. 2. and 3.
 5. 6. Growth as No. 1. but more smut.
 7. Very smutty.
 8. Not so bad growth as No. 7.
 9. 10. Better ; but some smut.
 11. Ears as No. 2. nearly free from smut.
 12. Ditto ; but more smutty.

The following is the copy of my bailiff's account taken afterwards.

- No. 1. Seven smutty ears.
 2. One hundred and five smutty ears.
 3. Five ditto.
 4. Six ditto.
 5. Thirty-five ditto.
 6. Thirty-two ditto.
 7. One third of the whole smutty.
 8. One half smutty.

G g 4

9. Twenty

9. Twenty smutty ears,
10. Seventy-five ditto,
11. Five ditto,
12. Ten ditto.

As a great deal of the old seed never came up, the proportion of 7 smutty ears in the remainder is considerable, and should shew that sowing old seed is no security.

The first in point of freedom from the distemper, are those steeped in arsenic 24 hours, and Mons. B's power, these are equal, with this superiority, that twelve hours with the latter are equal to 24 with the former.

The next in freedom and nearly equal is that which was 14 hours in the arsenic steep; and the next to that No. 12, which was only 4 hours in the same steep. The superiority of arsenic to all the rest is decided; but it is remarkable that the time of steeping seems of consequence. Twenty-four hours lessens by half the quantity of smut on comparison with 4 hours. In Mr. Andrews's method, the seed is not steeped at all, but only swam. No. 6 was nearly his method, but it failed here very much; yet the quantity of arsenic I used was double what he prescribes. The reader is, however, to remember, that no man in his senses would sow such seed as that of this experiment. That gentleman's method is certainly sufficient with fine clean seed, because no crops are cleaner than his; but

to

to discover on what circumstance of the preparation the security depends, is an object certainly of consequence.

Every operation the feed went through did good, washing in common water lessened the smut from $\frac{1}{2}$ to $\frac{1}{3}$.

Swimming in brine and liming, appears to be utterly deficient.

A striking feature in the result is, the utter failure of the method so warmly recommended by *Monf. l'Abbé Tessier*; yet nothing can be more decisive than the circumstances as reported by him; and in consequence of his and *Monf. Tillet's* experiments, the King's council in France issued an edict prohibiting the use of arsenic and other poisonous drugs. Conclusions are not to be drawn from one experiment, I shall repeat this and with variations.

AN ACCOUNT OF THE NET PRODUCE OF ALL THE TAXES,

From the 5th of April 1785, to the 5th of April 1786, and from the 5th of April 1786, to the 5th of April 1787.

| CUSTOMS. | 1786. | 1787. |
|--|---------|---------|
| Wines and Vinegars, 31st July 1726 | 110,855 | 116,688 |
| Tobacco — Ditto — | 111,016 | 90,015 |
| East India Goods, — Ditto — | 173,029 | 155,854 |
| Duty on Whale Fins, Ditto | | |
| 25 per Ton French Wines imported, } 29th Sept. 1715 ———— } | 22,436 | 11,692 |
| Additional Subsidy on Tonn. & Pound- } age, 25th Oct. 1760 ———— } | 469,248 | 419,062 |
| One-third addit. Subsidy, 8th March 1706 | 159,679 | 141,782 |
| Additional Poundage, 1st March 1747 | 308,222 | 299,897 |
| Ditto ———— 5th April 1759 | 309,351 | 320,994 |
| Gum Senega, 24th June 1765 and 1774 | 130 | 581 |
| Cambricks and Sugars, 1st Aug. 1766 | 771 | 320 |
| Crape's, &c. — Ditto — | 1,050 | 3,000 |
| East India Wrought Silks, Ditto — | 19,322 | 15,001 |
| Cotton Wool, 1st Jan. 1780 ———— | 1,000 | 389 |
| Tobacco and Sugars, 5th April 1781 — | 552,083 | 383,026 |
| Tobacco, Snuff, & Brandy, 1st June 1782 | 142,977 | 131,485 |
| Pepper and Raisins, 8th Feb. 1709 — | 33,319 | 48,589 |
| Imported Wines, 25th March 1745 — | 69,329 | 27,483 |
| Ditto ———— 31st March 1763 — | 70,006 | 31,265 |
| Ditto ———— 5th April 1778 — | 68,315 | 27,013 |
| Ditto ———— 30th May 1780 — | 69,084 | 25,254 |
| Canvas and Lawns, 1st Aug. 1767 — | 2,051 | 6,458 |
| Coals, 29th Sept. 1710 ———— | 189,205 | 186,446 |
| One-half Subsidy, 31st July 1712 — | 98,684 | 39,969 |
| Additional 5 per Cent. on Goods, 5th } and 25th of July 1782 ———— } | 226,246 | 226,641 |
| Drillings and Broad Linens, 25th May } 1767 ———— ———— } | 4,149 | 3,120 |
| Apples imported ———— — | 615 | 230 |
| One-half Subsidy, 31st July 1714 — | 98,684 | 39,960 |
| Additional Impositions on Goods, 31st } July 1716 ———— ———— } | 78,727 | 142,026 |
| 5 per Cent. ———— on Goods, 5th } April 1779 ———— ———— } | 229,466 | 194,866 |
| Two-thirds Subsidy, 8th March 1711 — | 182,002 | 172,122 |
| | | Brandy, |

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| | 1786. | 1787. |
|--|---------|---------|
| Brandy, 29th Sept. 1736 | 38,405 | 24,473 |
| Goods exported, 8th March 1710 | 47,620 | 48,486 |
| Coals — Ditto | 125,845 | 122,198 |
| Ditto — 2 Aug. 1714 | 14,036 | 13,530 |
| Additional Ditto 5 July 1757 | 21,317 | 17,839 |
| Coals and East India Goods, 1st June 1765 | 51,571 | 37,878 |
| Coals 25th March 1719 | 108,671 | 108,384 |
| 1d. per Ell Foreign Sail Cloth, 29 Sept. 1765 | 637 | 117 |
| 4½ per Cent. Plantation Duty, Ditto | 25,364 | 23,487 |
| Coinage Duty on Wines | 6,195 | 6,115 |
| Ditto — Spirits | 10,681 | 10,776 |
| Rum and Sugars, before the 29th Sept. 1764 | 3,088 | 2,411 |
| Sugars, &c. — Ditto | | 153 |
| Ditto — since Ditto | 1,196 | |
| Spices and Picures, 24th June 1714 | 2,015 | 3,019 |
| Additional Spices and White Calls, Ditto | 34,014 | 21,218 |
| Wrought Plate, 1st June 1720 | | 92 |
| Rice exported, Ann. 1765 | | |
| Ditto — 1772 | | |
| Ditto — 1773 | | |
| Melasses, &c. 1st Nov. 1766 | 1,310 | 1,044 |
| Candles, 25th March 1711 | 667 | 1,000 |
| Ditto - 1st May 1715 | 667 | 1,000 |
| Soap, 10th June 1712 | 2,036 | 2,012 |
| Additional Soap, Paper, and other Duties, 2d Aug. 1714 | 2,025 | 10 |
| Hides, 24th June 1711 | 4,181 | 4,238 |
| Additional Hides, Starch, and Drugs, 10th June 1712 | 2,176 | 4,294 |
| Glass, 5th July 1777 | 5,073 | 3,104 |
| Unrated Goods imported undervalued, 25th March 1725 | 397 | 135 |
| Verdigrease, 24th June 1781 | 2,061 | 2,360 |
| Wax, Ann. 1782 | 180 | 4 |
| 18 per Cent. on Muslins, 1st Aug. 1783 | 123,000 | 128,800 |
| Silk and Lead, 20th Sept. 1784 | 90,139 | 137,541 |
| Coffee, 5th July 1784 | 18,743 | 24,669 |
| Bricks and Tiles, 1st Sept. 1784 | 60 | 111 |
| Fines and Forfeitures, 25th Oct. 1760 | 1,484 | 2,408 |
| Enumerated Duties, 5th April 1715 | 1,071 | 63 |
| Tea, 5th July, 1784 | 500 | |
| Paper, 11th Aug. 1784 | 2 | 957 |
| Plate, 5th July 1784 | 6 | 32 |
| Starch, 6th June, 1780 | 1 | |
| Gum Senega, 5th April 1752 | 364 | 692 |
| Candles, 1st Aug. 1784 | | |
| Glass Paper, &c. 20th Nov. 1767 | | |

Deals

| | 1786. | 1787. |
|--------------------------------------|---------------------|------------------|
| Deals and Battens, 5th July 1786 — | — | 24,142 |
| Additional Tobacco, 1st January 1781 | 200 | — |
| | <u>£. 4,528,168</u> | <u>4,045,249</u> |

E X C I S E.

| | 1786. | 1787. |
|--|---------|---------|
| 99 Years Excise, 25th Jan. 1695 — | 176,329 | 171,775 |
| Candles, 25th March 1711 — | 106,263 | 88,145 |
| Ditto — 1st May 1715 — | 106,263 | 89,111 |
| Ditto — 1st Aug. 1784 — | 113,848 | 94,928 |
| Hops, 1st Aug. 1715 — | 72,627 | 86,481 |
| Soap, Paper, and other Duties, 10th } June 1712 — | 251,618 | 249,393 |
| Additional, 2d Aug. 1714 — | 171,172 | 171,646 |
| Additional Soap, 5th July 1782 — | 99,527 | 94,389 |
| British Spirits, 29th Sept. 1736 — | 20,674 | 26,192 |
| Ditto — 25th March 1743 — | 20,491 | 26,115 |
| Ditto — 1746 — | 9,978 | 12,712 |
| Ditto — 1st July 1751 — | 29,423 | 38,137 |
| Ditto — 21st April 1760 — | 101,336 | 129,533 |
| Ditto — 21st Jan. 1762 — | 20,376 | 25,985 |
| Ditto — 30th May 1780 — | 20,672 | 26,140 |
| Brandy, 29th Sept. 1736 — | 454,793 | 423,308 |
| Additional ditto, 21st April 1760, and } 1st July 1766 — | 133,496 | 124,264 |
| Additional ditto, 21st Jan. 1762 — | 22,034 | 19,942 |
| Ditto — 30th May 1780 — | 43,930 | 39,822 |
| 5 per Cent. on several Duties, and 15 } per Cent. on Malt, 5th April 1779 } | 126,477 | 128,478 |
| Additional 5 per Cent. 5 April 1780 — | 40,734 | 35,680 |
| Ditto — 1781 — | 81,650 | 90,768 |
| Ditto — 5th and 25th July 1782 — | 86,130 | 88,845 |
| 9d. Additional Excise, 17 May 1697, } for Annuities 1706 — | 176,329 | 171,774 |
| Plate Licences, 5th July 1758 — | 6,506 | 6,697 |
| Additional 3s. per Barrel on Ale, 24th } Jan. 1761 — | 575,603 | 547,536 |
| Auctions, 29th Sept. 1777 — | 41,904 | 44,435 |
| Table Beer, 5th July 1782 — | 23,245 | 23,110 |
| Hereditary and Temporary Excise, 25th } Oct. 1760 — | 315,492 | 310,166 |
| 2-sevenths of 9d. Excise — | 50,379 | 49,078 |
| 5-sevenths — ditto — | 125,949 | 122,696 |
| 3d. Additional Excise, 25th March 1710 — | 58,718 | 57,173 |
| Low Wines, 29th Sept. 1736 — | 13,483 | 15,782 |
| Additional ditto 25th March 1743 — | 13,081 | 15,739 |

Additional

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| | 1786. | 1787. |
|---|-----------|-----------|
| Additional Low Wines, 25th Mar. 1746 | 5,472 | 6,930 |
| Ditto ——— 1st July 1751 — | 15,681 | 20,790 |
| Ditto ——— 21st April 1760 — | 60,862 | 74,329 |
| Ditto ——— 21st Jan. 1762 — | 12,169 | 14,862 |
| Ditto ——— 30th May 1780 — | 12,335 | 14,948 |
| Sweets, 25th June 1737 — | 12,872 | 9,666 |
| Additional Ditto, 5th July, 1780 — | 6,393 | 4,832 |
| Hides, 24th June 1711 — | 132,358 | 132,897 |
| Additional Hides, 10th June 1712 — | 78,523 | 78,852 |
| Wire and Starch, Ditto — | 28,848 | 27,991 |
| Additional Starch, 6th July 1780 — | 31,183 | 24,427 |
| Coffee, 24th June 1724 — | 647 | 154 |
| Old Cocoa Nuts, 5th July 1781 — | 90 | |
| Additional Ditto — 1781 — | | |
| Tea, 24th June 1745 — | 41,805 | 4,037 |
| Tea Licences, 5th July 1780 — | 9,656 | 10,797 |
| £.3,700 per Week Excise, 25th Dec. 1705 | 196,100 | 192,400 |
| Licences for retailing Spts. Liquors, } 25th March 1743 and 1752 — } | 73,448 | 74,874 |
| Glass, 5th July, 1777 — | 91,693 | 96,472 |
| Additional Malt, 8th Feb. 1760 — | 350,203 | 295,736 |
| Ditto --- 30th May 1780 — | 280,945 | 214,750 |
| Cyder, 5th July 1766 — | 15,269 | 6,006 |
| General Licences, 11th Sept. 1784 — | 46,201 | 50,844 |
| Paper, &c. 11th Aug. 1784 — | 13,559 | 14,200 |
| Linens and Stuffs, 2d Oct. 1784 — | 29,700 | 3,493 |
| 15 per Cent. 11th Aug. and 2 Oct. 1784 | 5,991 | 2,558 |
| Bricks and Tiles, 2d Sept. 1784 — | 78,217 | 84,754 |
| Coffee, &c. Ann. 1759 — | 114 | |
| Coachmakers Licences and Duty, 5th } July 1785 — } | 1,001 | 1,957 |
| Surplus Duty on Tea, Ann. 1785 — | 158,319 | 368,121 |
| Imported Wines, 25th March 1745 — | | 32,538 |
| Ditto --- 31st March 1763 — | | 32,538 |
| Ditto --- 5th April 1778 — | | 34,165 |
| Ditto --- 10th May 1780 — | | 32,538 |
| Impost on Wines, 5th July 1779 — | | 6,597 |
| Ditto ——— 1782 — | | 6,597 |
| Men Servants, 21st May 1781 — | 3,074 | 22 |
| Coaches, 25th March 1747 — | 10,986 | |
| Additional Ditto, 5th July 1776 — | 2,496 | |
| Ditto ——— 1782 — | 3,41 | |
| Low Wines, Ann. 1786 — | | 38,799 |
| Sweets Ditto — | | 678 |
| All Wines (Scotland) — | | 2,000 |
| Fines on Coaches — | | 158 |
| Total £. | 5,520,170 | 5,664,295 |

S T A M P S.

| | 1786. | 1787. |
|--|---------|---------|
| Pamphlets and Stamp Papers, 10th June 1712 } ———— | 42,928 | 41,805 |
| Stamps per Hanaper Office, 24 June 1750 ———— | 3,562 | 3,236 |
| Paper and Parchment, 1st July 1710 ———— | 44,081 | 32,084 |
| Paper, Cards, and Dice, 24th June 1711 ———— | 15,510 | 17,790 |
| Additional Cards and Dice, 15th April 1756 } ———— | 8,540 | 9,226 |
| Ditto ———— 5th July 1776 ———— | 8,296 | 9,001 |
| Policies of Insurance, 10th June 1712 ———— | 6,853 | 6,742 |
| Additional ditto — 1st June 1765 ———— | 1,916 | 2,281 |
| Apprentice Duty, 1st May 1715 ———— | 6,066 | 7,556 |
| Additional Ale Licences, Easter 1756 ———— | 41,807 | 56,264 |
| Additional Policies, 1st August 1782 ———— | 93,349 | 94,233 |
| Post Horses, 1st August 1780 ———— | 61,945 | 2,653 |
| Additional Stamps on Paper and Parchment, 5th July 1757 } ———— | 81,277 | 80,261 |
| Ditto ———— 1759 ———— | 9,886 | 10,324 |
| Ditto ———— 1761 ———— | 416 | 383 |
| Ditto ———— 1765 ———— | 891 | 834 |
| Ditto ———— 1776 ———— | 58,732 | 62,154 |
| Ditto ———— 1777 ———— | 44,121 | 42,351 |
| Ditto 2d August 1779 ———— | 22,591 | 19,256 |
| Ditto 1st June 1780 ———— | 27,039 | 19,227 |
| Ditto 1st August 1783 ———— | 287,114 | 145,689 |
| Stamps on Bills of Exchange 1st Aug. 1783 } ———— | ——— | 34,137 |
| Stamps on Receipts, 1st Sept. 1783 ———— | ——— | 17,513 |
| Ditto — Births, &c. 1st Oct. 1783 ———— | ——— | 1,193 |
| Additional Ale Licences, 1st Sept. 1784 ———— | ——— | 16,571 |
| Hat Duty, 1st August 1784 ———— | ——— | 9,710 |
| Duty on Plate, 24th June 1784 ———— | ——— | 11,818 |
| Horse Dealers Licences, &c. 29th Sept. 1784 } ———— | ——— | 1,479 |
| Pawnbrokers Licences, 5th July 1785 ———— | ——— | 923 |
| Glove Duty, 1st August 1785 ———— | ——— | 4,744 |
| Attornies Licences, &c. 1st Nov. 1785 ———— | ——— | 16,112 |
| Game Duty, 1st August 1785 ———— | 32,716 | 47,664 |
| Medicine Duty, 1st Sept. 1785 ———— | 4,539 | 13,033 |
| Post Horse Duty, 1st Sept. 1785 ———— | 53,688 | 147,625 |
| Perfumery Duty, 5th July 1786 ———— | ——— | 8,197 |
| Additional Duties in Scotland, 5th July 1786 } ———— | ——— | 409 |
| Additional Paper and Parchment, 1st Aug. 1731 } ———— | 39,324 | 39,845 |
| Paper per Lottery, 2d Aug. 1714 ———— | 17,600 | 20,075 |
| Wine Licences, 5th July 1757 ———— | 17,975 | 19,316 |
| Almanacks, 24th June 1781 ———— | 1,383 | 1,231 |
| Stamps per Bank, 1st Aug. 1783 ———— | 12,000 | 18,000 |

A G R I C U L T U R E. 419

| | 1786. | 1787. |
|--|-----------|-----------|
| Additional Stamps on Paper, &c. 1st and 29th Sept. 1st Oct. and Dec. } 1784 | 104,518 | 50,678 |
| Additional Stamp Duties, 5th July and 1st Aug. 1785 } | 24,322 | 27,545 |
| Licences for selling Lottery Tickets, Ann. 1784 } | 93 | |
| Penalties, 1783 | | 144 |
| Money paid by John Rofs Mackye, Receiver General, on Account of Stamp Vellum } | | 348 |
| Licences for selling Lottery Tickets, Ann. 1785 } | | 375 |
| Ditto 1786 | | 1,000 |
| Additional Stamps, Scotland | | 127 |
| Arrears of Apprentice Duty | | 6 |
| £. | 1,175,390 | 1,153,680 |

I N C I D E N T S.

| | 1786. | 1787. |
|---|---------|---------|
| Salt, 5th April 1755 | 239,515 | 139,621 |
| Additional ditto, 10th May 1780 | 61,628 | 58,655 |
| Ditto — 22d June 1782 | 64,629 | 62,281 |
| £.700 per Week Letter Money, 1st June 1711 } | 37,800 | 36,400 |
| £.2,300 per Week Letter Money 1784 | 121,900 | 119,600 |
| Seizures, 25th Oct. 1760 | 5,937 | 5,478 |
| Proffers, ditto | 684 | 465 |
| Fines of Leases, ditto | 5,519 | 5,802 |
| Letter Money, ditto | 103,000 | 105,000 |
| Allum Mines, ditto | 960 | 960 |
| Compositions, ditto | 2 | 1 |
| Alienation Duty, ditto | 2,352 | 1,351 |
| Fines and Forfeitures, ditto | 160 | 105 |
| Rent of a Light House, ditto | 13 | 6 |
| Rent of Savoy Lands, ditto | 1 | |
| 6d. per Lib. on Pensions, 24th June 1721 | 48,900 | 47,400 |
| rr. Deduct on Salaries, &c. 5th April 1758 | 38,240 | 32,935 |
| Houses and Windows, 10th Oct. 1766 | 441,528 | 398,917 |
| Houses, 5th April 1778 | 126,220 | 128,810 |
| Hawkers and Pedlars, 23d June 1710 | 4,215 | 1,575 |
| Hackney Coaches, 1st Aug. 1711 | 10,800 | 9,824 |
| Ditto 1784 | 13,000 | 12,979 |
| Hawkers and Pedlars, 5th July 1785 | 2,650 | 1,720 |
| First Fruits of the Clergy | 6,438 | 6,413 |
| | | Salt, |

| | 1786. | 1787. |
|--|------------|------------|
| Salt, 1st Aug. 1785 | 9,000 | 12,000 |
| Tenths of the Clergy | 9,728 | 9,903 |
| Men Servants, 1777 (Arrears) | 103 | 23 |
| Two Wheel Carriages, 1785 | 83 | 22,690 |
| Four Wheel ditto | 5,878 | 103,710 |
| Carts, 1785 | 60 | 6,891 |
| Men Servants, 1785 | 3,883 | 78,326 |
| Female ditto ditto | 262 | 27,434 |
| Horses, — ditto | 755 | 89,964 |
| Shop Tax, — ditto | 97 | 43,427 |
| Waggons, — ditto | | 12,163 |
| Houses, Ann. 1727 | | 773 |
| L. | 1,364,750 | 1,682,887 |
| Total of Customs, Excise, Stamps, } and Incidents | 12,588,481 | 12,546,812 |

Exchequer, the 18th
Day of April 1787.

JOHN HUGHSON.

The opinions of statesmen may be used as a commentary on this enormous category of taxation.

In a speech attributed to the Right Honourable Mr. Fox, in the Morning Chronicle of Nov. 28, I find this passage—"It was now confessed by government that it was necessary to come to the lower orders of the people, those who were labouring under the heaviest burthens, those who paid for their candles, their windows, and all the various necessities of life: and say, *severely taxed as we know you are, you must, nevertheless, contribute something towards the expence of keeping political power upon a ballance in Europe.* This was open and manly; it was dictated by sound policy."—Mr. Woodfall has

has so much credit in the world for the accuracy with which he reports the speeches in parliament, that we may suppose so remarkable a passage of so remarkable a speech, and which he prints in inverted commas, was not materially erroneous ; but whether the great orator delivered those words or not, I shall not enquire ; I shall only enquire into the tendency of the doctrine to the agriculture of this country, and the classes immediately dependent on it.

Those who are acquainted with the history of this kingdom since the Revolution, know, that a large proportion of the amount of our taxes, has been occasioned by entering into, and carrying on, wars to secure the ballance of power in Europe : a Don Quixot pursuit ; in general so visionary, that we have as often, by our intermeddling and turbulent conduct, endeavoured to overturn that ballance, as to establish it : and any man that will consider the vibrations of party in this country, cannot fail acknowledging that the ballance of power has been in the hands of our political leaders, one of the most effective engines in squeezing money out of the pockets of the people. France was long the dreadful phantom of the imagination, that loaded us with the greater part of the preceding list of taxes ; and we were even taught by our crafty politicians, to dread a power when only the shadow of its great name remained. We have

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recently seen this kingdom a match for the whole House of Bourbon and Holland, with America much worse than a foe, and now we hear the wretched and stale tale once more sounded in our ears, that we are to look chearfully at new taxes, be they as heavy as they may, to preserve the ballance of power against that same France, which has been forced to beat up for allies in every quarter of the world, to secure her against the power of England; such are the ridiculous contradictions which stare every one in the face who would renew discourses upon that antiquated text—the ballance of power.

But what makes these opinions compleatly preposterous in this age, is the total neglect of the real ballance in these idle surmises of an ideal one: Russia and Austria are the formidable powers at present, supposing the fact that there are any existing *so* threatening as to demand our *interference*; but the tendency of the present fine system is to perpetuate the dissensions of those powers, who can alone withstand the new monsters that have arisen in Europe. Granting, therefore, all that can be said of the general necessity of preserving the ballance as a question of British politics, yet the present militates compleatly against it; and giving no satisfaction to our understandings, attempts to gratify the malignity of our passions—that leading one especially, the hatred of France.

Whatever

Whatever reasons there were in the age of Lewis XIV. of encouraging a natural antipathy to that kingdom, it must be equally agreed, that all such have ceased; and that every idea of the future balance in Europe, depending on new arrangements, it is now as necessary that we should be jealous of the advancement of other powers, as ever it was that we should abandon our fears of Spanish greatness, for apprehensions of, at that time, the rising star of France. And should, unfortunately for Europe, new dangers of that sort arise, will not our posterity have reason to curse the system, which by the burthen of vain and senseless wars, shall leave them in a debility incapable of defence, with real danger at their doors.

But no man can examine the powers upon the continent of Europe, without seeing clearly that there are many much more intimately concerned in the danger, and abundantly more able to resist it than we are: and with all the clear-sightedness of continental politicians, not one of them have any apprehensions of the power of France at present, nor have they had such for many years past. What, therefore, can be so compleat an insult upon the understandings of mankind, as, now to declare, that we ought to submit to any extent of taxation, in order to preserve the ballance of Europe, by opposing France;—by opposing a power dreadful nowhere but in the imaginations of men, who know

how convenient it is to have a bug-bear at hand, to frighten and cajole the people, for ends infinitely more dear to them, than all the ballances, of all the powers, that ever did, or ever will exist.

With these views the power of France is represented as dangerous to the ballance of those powers, who are themselves perfectly quiet and satisfied; and, who, instead of being alarmed, have not even made a complaint, or expressed an apprehension—and in order to guard against it, the people of England are told expressly, that, notwithstanding the preceding enormous burthens, which deprive many of them of the necessaries of life, they are to be ready to submit to new ones, for the same admirable and beneficial purposes!—And this opinion, this declaration—met, in an English House of Commons, with universal applause! No protest entered on the part of the people against such a system—not one word said to limit the extension of so fatal a policy—nor an idea offered to palliate so abominable a project, against the little possessions, incomes, comforts, and NECESSARIES of all the lower and helpless classes of the state!

Now as such ideas have fallen from men of superior talents, and of abilities infinitely too great to be so grossly deceived, is there not some reason to think that those opinions are embraced, which are conceived to be most popular—and that there is a certainty of suffering no injury in the public opinion,

nion, while the old cries are raised, of Ballance of Power, and Enmity to France! Should this be the case, it is the people who are chiefly to blame: If their leaders, for obvious reasons, will not enlighten them, they should enlighten themselves.—Their hatred of France may be very amusing, but taxes on leather, on soap, candle and beer, are not, I suppose, amongst the agreeable circumstances of their situation; let them reflect, that while they indulge their antipathy against any neighbouring nation, they do no more than lay themselves open an easy prey to those who know how to govern their purses by sacrificing to their follies. Ministers to fleece them—and oppositions to put themselves in a situation to do the same. It is surely very pleasant to hear men, to whom the weight of taxes is as a feather, tell the people they are to bear, without a murmur, whatever the knights errant of the balance of power may think proper to impose!

Go to the house of a country gentleman of 4, 5, or 600l. a year rental, and see the distress he lives in through the burthen of his taxes; In this country his land tax alone amounts to a seventh of the total; his poor rates to yet more, (a tax on him since he lets his land proportionably) then reckon his horses, servants of both sexes, his house, his windows, his carriage, (if it be possible he should keep one) his insurance, his sporting, &c. and before you come to one article of customs or excise on his consump-

tion, you have taken much more than a fifth of his income, without reckoning either tythe or poor rates. Taxes on consumption are not so easily calculated, but the experience of every house-keeper speaks the general weight—what an insult is it to the miseries of such a man to tell him that an attention to the ballance of power is to tax his bread—that curtailing the power of France is a sufficient reason for excising his meat—that a Dutch alliance is a return for a poll tax on his children—that a German league will pay well for a duty on chimnies and doors—and Hessian troops an adequate compensation for taxes on sheep, cows, and cart-horses. Such burthens are not expressly named, but the man who tells us, that the support of the ballance of power against France is to be attended to at the expence of the taxes that may be necessary to preserve it, lays down for a living, and effective political principle, a doctrine that includes and supposes the whole.

Under the influence of these ideas, we know how to appreciate such expressions as the same debate was full of,—Great-Britain, “no longer contending for existence, but for glory; and nobly re-assuming her wonted rank among the powers of Europe*.” Very fine indeed! and admirable logic

to

* “Is it meant that Britain ought always to have some continental connections or other; and that therefore, if one part of the

to tell us that we ought to look another hundred millions in the face, not for necessity, for existence, for rights; but for glory!——Glory, and the ballance of power, are ample recompences for all the distress, wretchedness, misery and ruin, that so many thousands would experience, in the case that is so lightly, and so wantonly trifled with.

A. Y.

REVIEW OF NEW PUBLICATIONS RELATING TO AGRICULTURE.

I.

Enclosures, a cause of improved Agriculture, cheapness of provisions, of population, and of both private and national wealth. By the Rev. J. Howlett. 8vo. 2s. Richardson.

SOME anonymous writers having attacked enclosures, Mr. Howlett offers this most complete and able refutation of all their arguments; a

H h 4

more

the continent refuse to accept of any connections with it, still it must have them, and must, therefore, seek them in another. For a moment let us lament the fate of our island, that having so long remained above water, it must now sink, unless chained and moored by some connection to the continent. In every divided state of Europe, and much more in every divided state of the German princes with each other, it must invariably be the interest of Britain never to concern itself with them; and the French nation
having

more satisfactory and conclusive performance cannot be desired; indeed, all this writer's pieces are deserving the closest attention of those who wish to be acquainted with the subjects he has treated, and justly rank him very high among the best political writers of the age. The whole tract is interesting; and I do not select the following transcripts by way of specimens, so much as to lay before my readers some information that is important.

It having been asserted, that butchers' meat has increased in price $1\frac{1}{2}$ d. in the pound, more than the advance of price in other things, Mr. Howlett, inserts these tables to prove the contrary.

Prices of Beef and Pork, at the Victualling-Office.

| Years. | | Beef, per Ct. | | | Pork, per Ct. | |
|--------|---|---------------|-------------------|---|---------------|-------------------|
| | | s. | d. | | s. | d. |
| 1740 | — | 23 | : 7 $\frac{3}{4}$ | — | 31 | : 0 $\frac{1}{2}$ |
| 1741 | — | 24 | : 9 $\frac{1}{2}$ | — | 36 | : 3 $\frac{1}{4}$ |
| 1742 | — | 24 | : 4 | — | 32 | : 9 |
| 1743 | — | 19 | : 2 $\frac{1}{2}$ | — | 27 | : 2 $\frac{1}{4}$ |
| 1744 | — | 18 | : 3 $\frac{1}{2}$ | — | 22 | : 5 $\frac{1}{4}$ |
| 1745 | — | 19 | : 9 $\frac{1}{2}$ | — | 21 | : 9 $\frac{1}{4}$ |
| 1746 | — | 21 | : 3 $\frac{3}{4}$ | — | 24 | : 8 $\frac{1}{4}$ |
| 1747 | — | 19 | : 4 $\frac{1}{4}$ | — | 24 | : 0 $\frac{1}{2}$ |

having taken one side of a German contest, is so far from being a just motive for England's taking the other, that for that very reason we ought so much the more to keep out of it. This is the principle which actuated our greatest statesmen for the first 20 years after the Revolution; and this was the sole principle by which one of the best politicians that ever sat on the English throne, governed himself through his whole reign." *Considerations on the German War, 1761.*

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| Years. | Beef, per Cwt. | | Pork, per Cwt. | |
|--------|----------------|----------------|----------------|----------------|
| | s. | d. | s. | d. |
| 1767 | — | 25 : 5½ | — | none bought |
| 1768 | — | 25 : 3½ | — | ditto |
| 1769 | — | 22 : 9 | — | 33 : 0 |
| 1770 | — | 22 : 2½ | — | 41 : 5 |
| 1771 | — | 22 : 6 | — | 43 : 3½ |
| 1772 | — | 26 : 3 | — | 52 : 6 |
| 1773 | — | 24 : 0 | — | 49 : 11 |
| 1774 | — | 28 : 8½ | — | 38 : 3 |
| 1775 | — | 30 : 4½ | — | 44 : 7½ |
| 1776 | — | 28 : 7 | — | 42 : 11¼ |
| 1777 | — | 28 : 5½ | — | 43 : 11½ |
| 1778 | — | 25 : 8 | — | 43 : 0 |
| 1779 | — | 33 : 2 | — | 38 : 6 |
| 1780 | — | 31 : 2 | — | 40 : 9 |
| 1781 | — | 26 : 3 | — | 37 : 6 |
| 1782 | — | 26 : 8 | — | 41 : 0 |
| 1783 | — | 30 : 0 | — | none purchased |
| 1784 | — | none purchased | — | ditto |
| 1785 | — | 25 : 6 | — | 45 : 0 |
| | | ready-money } | | { ready-money |

Annual Average Cost of Butter and Cheese, at the Victualing-Office, from 1750 to 1786, both inclusive, as under :

| Years. | Butter, per lb. | | Cheese, Cheshire, per lb. | | Ditto, Suffolk, per lb. | |
|--------|-----------------|-------|---------------------------|---|-------------------------|--------|
| | d. | | d. | | d. | |
| 1750 | — | 5 | — | — | — | 1 5/10 |
| 1751 | — | 4 1/4 | — | — | — | 1 1/4 |
| | | | | | | 1752 |

| Years. | Butter, per lb. | Cheese, Cheeshire, per lb. | Ditto, Suffolk, per lb. |
|----------------------------|--------------------|-------------------------------|----------------------------|
| | d. | d. | d. |
| 1752 | $4\frac{1}{2}$ | — | $1\frac{1}{4}$ |
| 1753 | 4 | $2\frac{3}{4}$ | $1\frac{1}{4}$ |
| 1754 | $5\frac{1}{4}$ | — | $1\frac{1}{8}$ |
| 1755 | $5\frac{3}{8}$ | — | $1\frac{3}{8}$ |
| 1756 | $5\frac{1}{4}$ | — | $1\frac{1}{4}$ |
| 1757 | $5\frac{7}{16}$ | 3 | $1\frac{1}{4}$ |
| 1758 | $5\frac{1}{2}$ | $3\frac{1}{4}$ | $1\frac{3}{8}$ |
| 1759 | $5\frac{7}{16}$ | 3 | |
| 1760 | $4\frac{1}{2}$ | $2\frac{1}{2}$ | |
| Delivered at Plymouth } | $4\frac{1}{4}$ | $2\frac{1}{2}$ | |
| 1761 | $5\frac{3}{4}$ | $2\frac{1}{2}$ | |
| 1762 | 5 | $2\frac{1}{2}$ | |
| 1763 | $6\frac{3}{8}$ | $3\frac{7}{16}$ | |
| 1764 | $5\frac{3}{8}$ | $2\frac{1}{16}$ | |
| 1765 | $5\frac{3}{4}$ | $3\frac{3}{8}$ | |
| 1766 | $5\frac{1}{16}$ | $3\frac{3}{16}$ | |
| 1767 | $5\frac{3}{8}$ | $3\frac{3}{16}$ | |
| 1768 | $5\frac{1}{2}$ | $2\frac{1}{16}$ | |
| 1769 | $5\frac{0}{16}$ | $2\frac{1}{16}$ | |
| 1770 | $5\frac{7}{8}$ | $3\frac{3}{8}$ | |
| 1771 | $6\frac{3}{8}$ | $3\frac{1}{4}$ | |
| 1772 | $6\frac{1}{2}$ | $3\frac{5}{8}$ | |
| 1773 | 7 | $3\frac{1}{4}$ | |
| 1774 | $6\frac{1}{2}$ | $3\frac{5}{16}$ | |
| 1775 | $5\frac{1}{16}$ | $3\frac{1}{4}$ | |
| 1776 | $6\frac{3}{8}$ | $3\frac{1}{4}$ | |
| 1777 | $7\frac{1}{2}$ | $3\frac{1}{2}$ | |

| Years. | Butter, per lb. d. | Cheefe, Cheshire, per lb. d. | Ditto, Suffolk, per lb. d. |
|--------|--------------------------|------------------------------------|----------------------------------|
| 1778 | 8 | $3\frac{5}{8}$ | |
| 1779 | $8\frac{1}{8}$ | $3\frac{7}{8}$ | |
| 1780 | $7\frac{3}{8}$ | $3\frac{1}{8}$ | |
| 1781 | 5,8412 | 3,7977 | |
| 1782 | 6,2035 | 3,7574 | |
| 1783 | 6,4917 | 4,5541 | |
| 1784 | 7,3405 | 4,5512 | |
| 1785 | $6, \frac{45}{112}$ | $4, \frac{1}{112}$ | |
| 1786* | $6, \frac{14}{112}$ | $3, \frac{96}{112}$ | |

From the preceding beef and pork tables, it appears, that the medium prices of these articles, during three periods, within the compass of the last 46 years, have been nearly as follows :

| P E R I O D S. | Beef, per lb. d. | Pork, per lb. d. |
|--|---------------------------------------|--------------------------------|
| 8 years, beginning with 1740— | $2\frac{1}{2}, \frac{32}{112}$ | $2\frac{3}{4}, \frac{77}{112}$ |
| 5 years, beginning with 1767— | $2\frac{1}{2}, \frac{12}{112}$ | $4, \frac{23}{112}$ |
| 5 years, the last bought, ending with - - } | 1785— $2\frac{3}{4}, \frac{103}{112}$ | $4\frac{1}{4}, \frac{40}{112}$ |

From the butter and cheefe tables, their medium prices appear to have been, during four periods of five years each, nearly thus :

* It is true, that the prices given in this and the preceding tables, are, probably, much lower than they were at the several periods respectively, in the London and other particular markets, when the specified articles were bought for private and domestic use. But this forms no objection to the conclusions deduced from them ; because no reason can be given, why the proportion between them and the other should be different at different periods.

P E R I O D S.

| PERIODS. | Butter, per lb. | Cheese, Chesh. per lb. |
|-------------------------------|--------------------|---------------------------|
| | d. | d. |
| 5 years, beginning with 1750— | 4 $\frac{3}{4}$ | 2 $\frac{3}{4}$ one year |
| 5 years, beginning with 1760— | 5 $\frac{1}{2}$ | 2 $\frac{3}{4}$ |
| 5 years, beginning with 1770— | 6 $\frac{1}{2}$ | 3 $\frac{1}{8}$ |
| 5 years, beginning with 1780— | 6 $\frac{1}{2}$ | 4 |

As to the advance in the price of corn, during the last 40 years, it may be pretty clearly seen by the following tables :

Average prices of corn for 19 years, from 1746 to 1765, collected from the best authority that can be obtained :

| | Wheat. | | Barley. | | Oats. | |
|---------------|--------|-----|---------|-----|-------|-----|
| | s. | d. | s. | d. | s. | d. |
| Per quarter - | 32 | : 3 | — 17 | : 8 | — 14 | : 0 |

Average prices of the same grains, respectively, for 14 years, from 1771 to 1784, extracted from the corn register, established by act of the 10th of George III.

| | Wheat. | | Barley. | | Oats. | |
|---------------|--------|-----|---------|-----|-------|-----|
| | s. | d. | s. | d. | s. | d. |
| Per quarter — | 42 | : 8 | — 23 | : 8 | — 16 | : 0 |

It is evident, upon the slightest inspection of these tables, that butchers' meat, instead of being increased in price 1d $\frac{1}{2}$. in the pound more than other articles, is actually increased the least of all. Beef, we see has been advanced during the last 46 years, not even a halfpenny in the pound, whereas pork has risen almost a penny.

Butter,

Butter, in the course of about 36 years, has been raised one penny three farthings, and wheat, which we have been given to understand was not advanced at all, is really advanced more than any thing else, being, on an average, almost one-third higher for 14 years, ending January 1784, than during 19 years, ending with 1765." —

“ What shall we say, particularly to the recent enclosures in Somersetshire? to those of Wedmore, Blackford, Crofs, Huntspitt, Glastonbury, Westhay, Mark, Wookey; which have all taken place within the last twelve years, and contain more than 10,000 acres*? While in common, they were not, by the estimation of the most skilful farmers, of, comparatively, very little value? But now, in consequence of being drained and properly managed, are they not let at 25s. an acre? The surrounding lands, meantime, instead of being diminished in value, are they not even improved, and rented con-

* The number of acres in each of the specified enclosures, and the periods at which they respectively took place, are as follows :

| Dates. | | Names. | | Acres. |
|--------|---|-----------------------|---|--------------------|
| 1774 | — | Wedmore | — | 2600 |
| 1781 | — | Ditto Blackford Manor | - | 950 |
| 1778 | — | Crofs | — | 300 |
| 1778 | — | Huntspitt | — | 1100 |
| 1778 | — | Glastonbury | — | 1400 |
| 1778 | — | Westhay | — | 1700 |
| 1781 | — | Mark | — | 2000 |
| 1783 | — | Wookey | — | 90 |
| | | | | <hr/> 10,950 <hr/> |

siderably

siderably higher? Are not the sheep on most of these new enclosures, more numerous, and, in the room of being, as formerly, poor and miserable, and often dying with the rot, are they not even during the winter months, fatted and made fit for the butcher? Are not the neat cattle, of every kind, more than doubled? Are not the milch cows, in the single parish of Wedmore, increased upwards of 500? And are not these, on the most moderate allowance, equal to an additional rental of 2000*l.* a year, exclusive of the number of persons maintained by the employment they afford? The horses too, although not multiplied in number, are they not, from the improvement in the breed, greatly augmented in aggregate value? The poor, at the same time, have been constantly so much better employed, that the rates have continued nearly the same, and do not increase, though it is well known that in many other parts of the kingdom they have been nearly doubled, within the period just now mentioned. Amidst this profusion of produce, these multiplied flocks of fattened sheep, these crowded droves of kine and oxen, where is the evidence, that these enclosures have contributed to heighten the price of beef and mutton? Would they be sold the dearer, because three times the quantity was sent to market? Where is the probability, that they could not be afforded as cheap as before? Or, that the increased products were not more then
equivalent

equivalent to the increased expences? The improved condition of every rank of people here speaks the contrary!"

The following record of the profit of sheep, deserves noting.

" Five Norfolk ewes were bought sometime after Michaelmas 1783, for 16s. a head, and were kept in enclosed fields and pastures of much inferior quality to the above. Early in the spring 1784, they produced seven lambs, which were all sold to the butcher in the month of May, for 16s. a head. They shorn in the summer about half a tod of wool, which was sold for 9d. per pound: the five sheep took the ram again, and in the month of August, in the same year, had seven lambs more, which, not long after Michaelmas, made 10s. each. Of the five ewes, four being tolerable meat, were sold at their original price, in the month of October, and the fifth, early in the next spring, fetched a pound. The total produce of these five sheep, in something more than the compass of a year, was 9l. 16s. 6d. and all this upon little more than an acre of ground; so copious and abundant was the crop of clover."

In Wilts and Hants, says a correspondent from Somerset, " Sheep are usually folded the whole year, and a fold of ewes and lambs from a good meadow is extremely valuable, it being the goodness of the feed upon which depend both the quantity and worth of the dung. Eight hundred couples will

will cover an acre in a night, which may be fairly estimated at 16s. often 20s. for the ensuing barley crop. The summer dung decreases much in value, till two or three weeks before wheat sowing; then again it encreases, and, where they can sow immediately after the fold, the dung of 1600 sheep, which are sufficient at that season of the year for an acre, is worth as much as the 800 couples were for barley. To sum up: I think the value of the manure arising from 100 sheep may be justly stated at about 15l. per ann. In the county of Wilts, at least, I know I am nearly right."

*Particulars of 5000 acres enclosed on Mendip Hills,
in Somersetshire.*

| Names of the enclosures. | No. of Acres. | Improvements. | |
|-----------------------------|------------------|----------------------|----|
| | | s. | s. |
| Charter House | 400 | 4 | 12 |
| Ashwick - - | 200 | 4 | 18 |
| Cranmore E. } and W. - } | 400 | 3 | 12 |
| Uby - - - | 900 | 4 | 16 |
| Haydon - - | 300 | from 3 per acre to | 12 |
| Doubting and } Stoke - } | 700 | 3 | 14 |
| Emborough - | 600 | 3 | 12 |
| Shepton Mallet | 800 | 3 | 15 |
| Blagdon - - | 900 | not quite completed. | |

Cultivation,

Cultivation, expences, and produce of six acres enclosed, in 1780.

DEBTOR.

| | | |
|--------------|---|-------------------------|
| 1780, Oct. | To 1st ploughing, 16 ^{s.} per acre | £. 4 : 16 ^{s.} |
| 1781, March. | Crop ditto - 12 | 3 : 12 |
| May. | To dragging 8 | 2 : 8 |
| | 20 quarters, or 160 bushels of lime per acre, at 20d. per quarter - - - - } | 10 : 0 |
| June. | Spreading lime, &c. - - | 0 : 18 |
| | Ploughing - - - - - | 1 : 4 |
| | Harrowing - - - - - | 0 : 8 |
| Sept. | Ploughing and fowing - | 1 : 16 |
| | 12 bushels of feed-wheat - | 4 : 10 |
| 1782, Aug. | Reaping and securing - - | 3 : 0 |
| | | <hr/> 32 : 12 <hr/> |
| | Ballance profit - - - - | 9 : 8 |

CREDITOR.

By 30 sacks of wheat, at 28s. - - - 42 : 0

Mischiefs of Commons.

“ In the parish of Sutton Coldfield, in Warwickshire, an ingenious and very obliging correspondent assures me, there are several thousand acres of common, upon which every poor family

in the place has the right of commonage, and some individuals keep even twenty sheep each. Besides this, five or six hundred acres are successively enclosed every four or five years, and an acre allotted to each, which he lets, or cultivates, as he thinks most convenient or profitable. At the expiration of this term, the fences are thrown down, and the land again becomes common, with the feed very much improved, from the temporary cultivation it has had, and a similar enclosure of another part of the common, immediately succeeds. So that the poor have here a double advantage; the privilege of turning their little stock upon the common at large, and the allotment of an acre in the temporary enclosure, of which they frequently make a guinea annual rent. And what is remarkable, and particularly to our present argument, these advantages have greatly increased within the last thirty or forty years; the allotments having been enlarged, from half an acre to a whole one, and the improvement in the cultivation having rendered the same quality of double value. Here then, surely we shall find the poor in a most comfortable condition, and scarcely any burthen at all to the parish—just the contrary. The total annual expence maintaining them was,

| | £. | s. | d. |
|-----------------|-----|----|----|
| In 1742—3, only | 195 | 1 | 3 |
| In 1766—7, | 514 | 18 | 0 |

In 1781

| | £. | s. | d. |
|------------|-----|----|-------|
| In 1781—2, | 816 | : | 0 : 0 |

| | | | |
|------------------------|---|---|---|
| In 1785—6, even 1025 : | 3 | : | 0 |
|------------------------|---|---|---|

Parochial assessments, indeed, within compass of time here stated, have been doubled throughout the kingdom, and in some particular places, even more ; but I do not recollect a single instance, large manufacturing towns excepted, where, as here, they have been multiplied more than five times.

II.

A letter to a Member of Parliament on the necessity of an amendment in the laws relating to the woollen manufactory. 8vo. 1s. Ipswich. Rivington.

THE misery of the poor in Suffolk and Norfolk at present owing to the Woolmen having successively deducted to the amount of 5d. (and in some works, it is said, even 6d.) in the shilling, is the occasion of this sensible pamphlet, which points out in strong colours the enormity of the conduct. The following extracts will suffice, to make the reader acquainted both with the subject and the performance :—

“ The Woolcombers, Sir, are a set of men whom I believe to be by no means blind to their own interest ; this they have clearly evinced by taking such an advantage of the inefficacy of the act of Queen Elizabeth, as never was attempted, nor, I believe, so long uninterruptedly practised in this

1 i 2
kingdom,

kingdom, by any set of men whatsoever ; I mean, Sir, their mode of paying for the spinning of wool into yarn ; in the doing of which, they have assumed to themselves an arbitrary power of deducting sometimes two-pence, three-pence, and, at this time, four-pence out of every shilling, which has been honestly and industriously earned, by every poor person employed in that branch in the county of Suffolk : although at this time, the spinners of wool into yarn in the county of York are, as I am informed, paid their full wages without any deduction whatsoever, and that too in a country where provisions are cheaper than in the more southern parts of this kingdom. If a carpenter, bricklayer, or any other journeyman be employed by the day, week, or piece, he claims a right, and he is justly entitled to receive wages for the same in proportion to his labour ; it is the honest earnings of his industry, and the just reward of his diligence. And I should conceive that no instance can be produced of a deduction having been made at the rate of 25l. and 33l. per cent. out of such wages ; yet this is the constant practice of the woolcombers towards the spinners : it may not, therefore, be unnecessary to enquire into the reasons which have induced the woolcombers to make those deductions ; why the spinners have so long and peaceably acquiesced under such illegal exactions ; and the consequence which have attended such acquiescence ; and to consider whether

ther any, and what, measures can be pointed out to remedy these unwarrantable proceedings for the future. Let us, therefore, now consider that part of the present state of the Woollen Manufacture only, from the purchase of the fleece to the disposal of the yarn; from whence we may be able to form a proper judgment of the conduct of the Woolcombers in general.

| | |
|---|-------|
| “ The average price of a pack and a quarter of Lincolnshire or Kentish wool, containing 300lb. for 20 years last past, has been - - - - - | £. s. |
| | 7 10 |
| “ The expence of washing and combing it - - - - - | 2 10 |
| “ As this wool, by washing and combing, wastes one-fourth, or to a neat pack of 240lb. the expence of spinning it into yarn into what is called twelve-penny work, deducting only 3d. out of every shilling, from the spinner (though the deduction now made is 4d.) is - - - - - | 9 0 |
| “ The expence of the packman and packhouse-keeper in carrying out and taking in such work, and the carriage and commission upon the sale of it, is - - - - - | 2 0 |
| “ The expence of the woolcomber upon a pack of yarn of twelve-penny work, is - - - - - | 21 0 |

The

| | | | |
|--|---|-------|----|
| “ The average price of a pack of yarn fold at Norwich market, at 2s. in the pound - - - - - | } | £. | s. |
| | | 24 | 0 |
| “ Profit upon a pack of yarn of twelve- penny work - - - - - | } | 3 | 0 |
| | | | |
| “ The capital a woolcomber ought to have who makes 8 packs of yarn in one week, or 416 packs in one year, is 3,000l. and the profit upon 416 packs, at only 3l. per pack, is | } | 1,200 | |
| | | | |

“ By the foregoing calculations, which I have great reason to believe is not very inaccurate, for I wish not to mistake, it appears that the woolcomber makes a profit of 40l. per cent. upon his capital, and that too without hazard, as the whole business is carried on for ready money, or at least the yarn is paid for by drafts, which is nearly equal to it; and these profits increase in proportion to the credit given to the buyer of the yarn. Upon a pack of wool of seven quarter, or two shilling work, which is used in the making of bombazines, and from which the woolcomber makes a deduction of sixpence in a shilling from the spinner, there is an average profit of about 5l. on each pack.

“ Who are the judges of these market prices? The woolcombers. Do they call any of the country gentlemen or magistrates to their assistance, to consider of the propriety or impropriety of their deductions? No:—they, and they only, are the sole arbiters

arbiters of the fate of the poor, and issue their fiat, whereby many industrious persons are deprived of the just reward of their labour and industry ; besides which, it appears to be very extraordinary, that there should not, in the course of many years, have been scarce an instance of the woollen manufacture being in so thriving a state as to warrant the woolcombers giving a spinner one shilling for twelve-penny-worth of work performed in the county of Suffolk.

“ I would ask those gentlemen, Whether a deduction has ever been made out of the wages of the journeyman comber, or the weaver ? To which, if they answer in the negative, another question immediately arises : Why should it be made from the poor spinners, who, even were the full earnings paid, receive a less proportionable share for their labour, than either of the other two ; for the *dulness of the trade and the great price of wool*, should be equally affecting to all.

“ Should it be asked, Why the spinners of wool have for these fifteen years submitted to these exactions ? it may be answered, that the only employment of the poor of this country is in the spinning of wool into yarn ; and were they not to comply with these hard terms, however speciously dressed up, they must either starve, or repair to a work-house, where they would be obliged to perform the same kind of labour ; and, in this situation, the

applies their earnings towards their maintenance, and the deficiency is raised by the inhabitants, consequently these unfair deductions of the woolcomber, is one great cause of the increase of the poor rates in the county of Suffolk."

That the subject ought to be taken into the consideration of Parliament is certain. This writer's proposal is to give the justices a power of settling the rates of labour; whether that could be done in the way he has stated, without inconveniences is another question; the evil should be thoroughly understood in the first place, and that would best be done by a Parliamentary enquiry:

III.

Live and let Live: a treatise on the hostile rivalships between the Manufacturer and Land Worker. 8vo. 1787. 2s. Debrett.

THIS is a very able performance occasioned by the Wool bill at present depending in Parliament; it considers the question of interest between the parties and the nation at large, with great political knowledge; and though the subject is in general treated, perhaps, on too many abstract propositions, yet is the whole deserving of great attention, proceeding, manifestly, from the pen of a man of considerable parts, and abounding with observations closely to the purpose. The following extracts will not only justify this commendation, but give pleasure to most of my readers.

" These

“ These maxims, henceforward avowed, are, that the produce of the land worker, both food and raw materials, shall come to market, under such restrictions as the manufacturer and residents of the great towns shall advise and persuade government to make : that when at market, it cannot be permitted to be bought and sold, as the nature of a multifarious distribution may demand it, but as these classes shall destine it ; first, that they may have the pre-emption, and next, that they thereby depress the price ; and in fact, that they may have the monopoly of the whole. Finally, that in the article of the wool, the grower ought not to be permitted to sell at any foreign market, that surplus of his produce, which the home market will not take off. And in order to keep down depressed the price of what he is permitted, thus fettered and monopolized, to sell, the manufacturer hath managed to get regulations established, by which wool*, from other countries, from lands not taxed, shall be brought into competition in the English market against the English wool, locked up by a monopoly, and lying under a load of taxes : to commodities, under such different circumstances, what would be a good, nay, a thriving price to the one, would be to the other a ruinous depredation : and yet, to this oppressive rival is the English wool subjugated.—That system, formed for the English wool market, which first delivers the commodity there

* From Ireland.

to an absolute monopoly, which doth not take off the whole which is at market, but which always leaves, as a *dead load* on the growers hands, a *surplus unbought*, either because the manufacturers do not want it, or because the wool buyer keeps an advanced stock in hand. After the monopoly hath taken off what quantity it chuses at its own price, it will not take off the rest *at any price*, and yet this surplus, more than the home market wants, is not now, since 1660, permitted to go to the foreign market. One would think, that all this was sufficient to answer the most avaricious wishes of the favoured class, in lowering the price; but it is not so; nor indeed is the thirst of avarice any more than that of a dropsy, ever satisfied. There is a superadded act of tyranny, established by law, that wool and yarn from Ireland, from lands not paying, in proportion to ours, any taxes, may be brought into the English market, as rival to our wool and yarn, at all times, whether the market be already overstocked or not, and whatever be the depression of the prices of our wool, and whether the English commodity, which is there, can, at any price, be sold or not. This is a system of tyranny and oppression, which cannot be paralleled by any example to be produced in any other country in the world, not in the most despotic!

“ Besides the depredations which an injurious worker, I wish to suggest to the commercial states-rivalship, so constituted, makes upon the landman,
some

some account of the loss which the nation at large suffers by this system, as unwise as it is unjust, and this is an instance of one port only. The quantity of woollen yarn, taken on an average of several years imported into Yarmouth, Norfolk, is annually six thousand packs, each pack is 240lb. that is 1,440,000lb. in all. This is spun of a wool fitted for stuffs and worsteds, the very sort of wool grown in the marshes of that country, and in quantity approaching to what that country could itself supply, but by which is it so far superceded in its sale. Here, besides the loss by depression of price, is the first article of actual loss of the sale of so much produce, at 6d. per lb. is 36,000l. in a county which could have supplied it. Again, taking an average of the different prices of spinning different sorts of yarn, and stating the twelve-penny yarn; this yarn thus brought from Ireland, is a loss of labour to the country of 72,000lb. per annum, at 3d. per lb. combing, is a loss of 18,000l. more; so that here, by this importation of yarn from Ireland into Yarmouth only, the country suffers a loss of labour to the amount of 90,000l. annually. Is this a measure calculated to prevent the exportation of wool, or to keep down oppressed its price below the scale of all other things?

“ Is this measure to employ and maintain the poor?

“ Is this creating a market for the land-workers produce? But how is the public benefited by these advantages,

advantages, centering in the conglomerated riches of a few individuals, while the labouring manufacturer can scarce earn bread, above the point of starving; while they and their families are daily falling upon the parishes; while the poor rates increase, and are from three to four times higher in the manufacturing countries, than elsewhere; while the grazier is robbed of near two thirds of the fair equal profits of his produce, and while the landlord finds that not only the value, but the rents of his land must sink, while the prices of every thing which he must buy are rising. Does this state of manufactures and commerce subsist the individual; diffuse wealth to the community at large, and render the state powerful in the body of the people?—

The following particulars relative to the fabricks of France deserve attention:—

“—The very superfine French cloths are made at Louvieres*, and Abbeville, and are entirely of Spanish wool, except the selvages.

“The cloths made in Languedoc for the Turkish, and in time of peace the Chinese trade, which they call Londrines, are of Spanish wool†. The best

* The cloths of Louvieres are so superior to those of Abbeville, both in quality and price, that they can hardly be named in the same class. A. Y.

† This is a common error; those beautiful cloths are made entirely of the wool of Roussillon and Narbonne, as I was well assured at Carcassone Lodeve and Beg de Rieux, and which agrees with that very curious account [inserted in the Annals, vol. v. p. 151. A. Y.

cloths which they make at Rheims are of Spanish wool.

“ There are many sorts of coarse wool brought from the Black sea, from Constantinople, from Asia, from Syria, to Marseilles, chiefly used in making mattraffes, which employ great quantities of wool.

“ The laine pellade, or that which is shorn from the skin after the sheep is killed, costs from 40 to 50 livres the quintal of 100lb. The clipped wool, in all its dirt and grease, as it comes off the sheep’s back, from 50 to 60 livres per quintal : washed, 24 sous per lb. The wool of the Black sea, like hair, from 35 to 40 livres per quintal : African wool, from Barbary, about 40 livres per quintal. All these are carded for mattraffes, and in the operation lose at least two-thirds of the weight at which they are bought. When thus dressed and carded for use, they sell from 50 to 55 to 60 livres per quintal. The Spanish wool, which they import in gross at Marseilles, costs 100 petits ecus per quintal. The Tunis wool the same : the richest and best part of this is used in making the knitted caps, called maroquins, for the Turkish market : the rest is employed in hosiery.

“ The wool of Portugal, used in the same fabrics, is, washed, 60 sous per lb.

“ There is some very fine wool brought from Italy, almost equal to the Spanish. Some of the great manu-

manufacturers had a speculation of introducing this into their fabriques of Languedoc.

“ I have mentioned above, the wool of Rouffillon. The wool of Narbonne, is nearly as fine as that of Rouffillon, but more cottony, and of a shorter staple. The price to the first buyer is the same as that of Rouffillon, with this difference, the latter pays a duty, on entrance into Languedoc, of 4 or 5 livres the quintal ; on the former, there is no duty.

“ Notice has been taken of the wool of Bezieres above ; this is bought in the fleece, which as it comes off the sheep's back, with all its dirt and grease, will weigh from 5 to 8 to 10lb. the fleece, but when washed and dressed, 100lb. of the lightest will not produce above 30lb. of wool, and 100lb. of the more ordinary sort, not more than 28lb. This is bought at 3 livres, 3 livres 15 sous, to 4 livres 17 sous the fleece.

“ The wools of Pesenas in Languedoc, on the side of Montagnac, are bought in the fleece at nearly the same price, they are somewhat less fine, but produce in the dressing more wool.

“ The wool of the sea-coast is heavy and coarse, and serves only for the common drapery.

“ The wools of the mountains of Montpelier, and de Somieres, are of three sorts ; first, equal to the wool of Pesenas ; secondly, less fine ; thirdly, common stuff. First, washed, is from 33 to 34 sous per lb.

“ The pound of wool, completely dressed and spun,
costs,

costs, in Languedoc, about 3 livres, 5 fous per lb. the small pound of 12 ounces.

“ The ordinary cloths of Rheims, are made of the wool of the country ; the second best, of the wool of Berry ; the superfine of Spanish wool. The wool of Berry, costs, (I suppose dressed, &c.) 3 livres, to 3 livres 5 fous the pound. The wool of Segovia, costs them 5 livres 8 fous per lb. of 18 ounces, half washed. They make in Languedoc three sorts of cloths ; the superfine for the Turkish market, a second sort, which is for the home wear of people of condition ; and a coarse cloth at Lodève, for the cloathing of the soldiers.

“ A good spinner will earn about ten or twelve pence a day.

“ A weaver at Rheims is paid 5 fous an ell, can weave 7 or 8 ells a day. Their cloths are half-ell wide, so that he gains from 35 to 40 fous, or 20 pence English a day.

“ Wheaten bread, the finest white is three fous, the lb. of 16 oz. such bread as the manufacturers eat, 2 fous per lb.

“ Butchers' meat about 7 fous per lb. and garden stuff extremely cheap.

“ The fabricks at Rheims, besides the sort called *Drapes de Rheims*, are imitations of a Silesian drapery, and called *Silesies*, imitations of our Wilton, and called *Wiltons*, in a thousand varied forms of spotted and striped. They make also
casimirs,

casimirs, which they name marocs; also drugget and flannels, and blankets of all sizes, from 20 livres to 40 the piece. They have also a considerable fabrick of hosiery.

“ They have also fabricks of a second sort of cloth, at Elbeuf and Sedan.

“ The cloths of Julienne and the superfine fabricks of Sedan, as well in scarlet, as in other bright colours, and in black, are fit only for the rich. There are also fine mixed cloths of Van-Robais and Andelis. The Loviers suit the middling people, who are at their ease in their circumstances; the Elbeuse are best suited for the workmen and mechanics; Chateaurouge furnishes livery cloth; at Romarantin, Issoudun, Lodève, they make cloths for the military cloathing. There are still inferior coarser cloths, made for the wear of the payfans and country labourers.”

“ From this detail of the fabricks and of the wool used in these fabricks, *the fact comes out*, that they are established, supported and carried on in several branches, even to rival the English at market, without the use, or any mixture of the English wool.

“ There can be no doubt that the English wool, the combing wool, is smuggled over to France: I shall, perhaps, in the course of this paper, be able to mark some of the smugglers: it is chiefly, if not solely, used in the fabricks at Abbeville, and some
small

small quantity at Rheims, and, perhaps, at Lille, in the stuff and worsted goods made there, the druggets, camblet, and callimancoes, and tammies, as also in the warp of their other light cloths. But are these the branches of manufactures in which the French rival us? And inconsiderable as these fabrics are, in comparison of the supply of a great kingdom, inconsiderable as the quantity of English combing wool used in these, is in proportion to the British consumption, I cannot but wonder, that the monopolists have ventured to make such a rout about it; nothing but their perfect assurance that the implicit simplicity of the country gentlemen will submit, and not know how to contradict them in this.

I could wish to advise the country gentlemen, if I could flatter myself that I had any of that weight with them which I once had in these matters; and could suppose, that they would have spirit and system enough to act up to the advice, I could wish to advise them to come to decided opinion, that until it is permitted to export under a duty, such wool, as after lady-day next ensuing clipping, shall lie on hand as a surplus, which the home market will not take off, their common rights are infringed, and they do not enjoy equal liberty and reciprocal justice with the woollen manufactures and merchants; and hereupon to come to a fixed resolution, to be systematically and unvariably pursued, to obtain justice

factures, or *pretended manufactures*, made of wool slightly wrought up, or otherwise put together, so as that the same may be reduced to, and made use of again as wool," is fraudulently exported. This agrees with the information I received in 1775, and with what I learnt in France, namely, that wool is not chiefly imported into that country from England in the fleece, but divided into the sorts which they want: now these waddings, these pretended *manufactures*, so skilfully put together, which is the chief and principal form under which the great smuggling supply of wool to France is conducted, neither are nor can be exported by the wool growers; it must be wrought and thus put together by manufactures more than ordinarily skilled in the flubbing and working it to that particular point. The wool-growers cannot employ these: who are the employers? and who afterwards export it, and how is it exported? These are questions which the draughtsmen of the bill will find inconvenient to answer. I shall, however, for I have an equal right with them to use suggestion, if I had no better grounds, endeavour in the course of this paper, to point out where to look for the answer.

The preamble of the bill, which states the grievance to be remedied, as far as it goes, to ascertain it to any precise form and fact, states, that wool is fraudulently exported in the forms of *co-verlits*,

verlits, waddings, and pretended manufactures slightly put together : this fixes the act of the crime on the manufactures and their employers, totally clears and exculpates the wool-grower from all possibility of being concerned in this crime, or in the commission of it. To make the provisions of the bill conformable to the remedy required, regulations ought to have been brought forward to prevent these manufacturers, and their employers, from exporting these pretended manufactures. And yet this bill, passing by all regulations respecting the conduct of these manufacturers and their employers, to whom the crime described by the draughtsmen of the bill is brought home ; and yet this bill passing by the real remedy, is brought forward—A bill of pains and penalties against the wool-grower, *as a supposed possible criminal*, sequestering his property of wool, &c. &c. &c.”

ON THE EXPORT OF WOOL, AND THE BILL NOW DEPENDING IN PARLIAMENT.

By the Editor.

THE monopolists of wool having last session only postponed their bill of pains and penal-

ties against the growers, they have lately taken the necessary steps for renewing their attack, and give out, that immediately after the recess they shall again introduce it.

The scope, nature and tendency of that bill, I have on several former occasions fully explained, and shewn that there never was so injurious and tyrannical an effort made by one class of the people, against the liberty, property, and feelings of another class.

To ascertain the actual clandestine export, to stop which is the pretence (and only the pretence) of the bill; to discover what are the French manufactures which are supported by English wool; and to know in what degree they rival us, are all objects in this enquiry of the first importance. During the late summer, I travelled near three thousand miles in that kingdom, passing through many towns, celebrated for woollen fabricks; and through all that are supposed to employ English wool; I was very assiduous in making the necessary enquiries, and procured specimens of all, or by much the greater part of their fabricks, with the breadth, price, and wool of which made. I got the same intelligence respecting a great variety of their other manufactures. I noted also the quality and price of all the wools produced by every province I travelled through: and the result of these enquiries perfectly convinced
me,

me, that it was impossible the quantity of English wool smuggled to France could be considerable.

—That there was not a single fabrick in that kingdom which would stop, should such clandestine trade be absolutely put an end to for ever.—

That the manufactures in which English wool is used are not among the most flourishing of their fabricks, by many degrees, nor even among those in which they rival us the most successfully.

The first of these facts was contrary to my expectation ; for I conceived that the smugglers, from the difference of the price in the two kingdoms, had been more successful in the export.

But what comes more particularly to the point than any general information can possibly do, I procured the copy of an office commercial paper, which is in every respect the most compleat and satisfactory document on the subject that any reader can wish to see.

Monf. de Callonne, when minister of the finances, ordered an account to be taken of the imports and exports of the French trade, in order to ascertain the ballance of their commerce ; and as the various clandestine articles are known very much to affect it, every precaution was taken for discovering as nearly as possible the amount of it. Inquisitions and enquiries were made at all the ports, and the truth ascertained as nearly as a French minister could ascertain it. The article wool, is a considerable

nable one in this account; here follows a transcript of it:

Account of Wool imported into France, in 1782.

| | | | | <i>Livres.</i> |
|----------------------|---|---|---|---------------------|
| Spain | - | - | - | 13,600,000 |
| Portugal | - | - | - | 2,000,000 |
| Naples and Sicily | - | - | - | 4,131,000 |
| Ecclesiastical State | - | - | - | 1,485,000 |
| Turkey | - | - | - | 2,795,000 |
| England | - | - | - | 312,000 |
| Holland | - | - | - | 1,300,000 |
| Hanseatic Towns | - | - | - | 1,848,000 |
| Total | | | | <u>* 27,471,000</u> |

Reduction into English Money, at 10½d. for the Livre §.

| | | | | <i>£.</i> | <i>s.</i> |
|----------|---|---|---|-----------|-----------|
| Spain | - | - | - | 595,000 | 0 |
| Portugal | - | - | - | 87,500 | 0 |

* Mr. Necker *De l'administration des Finances de la France* states the import of raw materials for manufactures, hemp, cotton, silk, wool, flax, skins, ivory, drugs, dyeing, goods, wax, woods, &c. at 70,000,000 livres. It will easily be conceived, that wool at 27 millions, seems to bear a very high proportion to that total.

§ 10½d. is the common reduction, but not accurate; Sir James Steuart, who has treated more profoundly of the coin of the two kingdoms, than any other writer, calculates it at 22½ livres to the pound sterling. *Political Enquiry*, vol. 2, p. 405. He states, 499. 22 grains of fine silver, in the crown of 6 livres; and makes the proportion of the grain *poids de marc* to the English grain, troy; as 121. 78. is to 100. Vol. 2. p. 73.

Naples

| | | £. | s. |
|----------------------|-------|-------------|------|
| Naples and Sicily | - | 180,730 | : 15 |
| Ecclesiastical State | - | 64,986 | : 15 |
| Turkey | - - - | 122,280 | : 15 |
| England | - - - | 13,650 | : 0 |
| Holland | - - - | 66,875 | : 0 |
| Hanseatic Towns | - - - | 80,850 | : 0 |
| <hr/> | | | |
| Total | - | £.1,211,873 | : 5. |
| <hr/> | | | |

Upon this account, I have to observe, that it must necessarily be infinitely more satisfactory than if wool, or any part of their woollen manufacture had been the chief object, which called for, or produced it. Such a circumstance would have left suspicions, that it had been framed to serve some favourite purpose of French politics, and consequently might not be absolutely authentic: but being only a part (and compared with the total of their commerce) but a small part of the object in view; and not commanding any more attention than was in the same enquiry given to the other articles of their commerce, there remains not the least doubt of its being as accurate as a French bureau of trade could make it: and I surely need not observe, that the result of such an examination must of necessity be infinitely more deserving credit and attention, than the vague and desultory ideas, which are afloat in England; where such enquiries are never made, but to collect arguments for or against some measure

measure

measure that strongly interests the men who promote or oppose it.

In regard to the authenticity of the copy I took of this extract, the nature of the transaction will only allow me to remark, that the most abandoned profligate would hardly venture to make any variations in an account which others are in possession of in France, and through whose means it would not be difficult to effect a detection.—That the minister, by whose orders the general inspection was made, is at present in England, and may probably be in possession of a complete copy of the whole memoir, under such circumstances I must leave it to the candid reader to judge, whether he can have any reason to suspect the authenticity, so far as I am concerned in it.

I may with reason be thus far solicitous to establish the account, because it throws a new light on this trade. I do not know that the public were ever before put in possession of any means of ascertaining with tolerable exactness, the amount of the export of wool to France. I have read whatever I could procure on the subject, but never met with any thing but suppositions, conjectures, ideal calculations and imaginary totals. This detail establishes the amount in a manner as satisfactory as the nature of the trade allows, for it is not presumed that accuracy is possible in a clandestine one; the only satisfaction the reader can demand, or which can
by

by any party possibly be given to him, is, that the authority produced, is the best of which the case is capable. The export on this side the water being clandestine and severely punished when discovered, no possible means of knowing the amount can here be arrived at: on the other side the import is not clandestine, and by consequence it is abundantly easier to ascertain it: To effect that among all other commodities, but with particular attention to none, was the object of the French minister, and he certainly had better means of doing it than twenty thousand English woolmen, supposing them employed on the work.

At Beauvaris, Abbeville, Amiens, Lille, &c. the towns where English wool is supposed to be most used, I made many and very close enquiries: they all admit, and admit very freely, that they do use English wool, but at the same time they expressly assert the quantity to be very small, and in regard to their fabricks entirely depending on it, they treated the idea with contempt. There is more used in the *barracans* of Abbeville and Amiens, and the *camolets* of Lille, than in any other fabrick, the former is a light stuff chiefly worn by abbées, and neither one nor the other come in any considerable rivalry with our similar goods; nor are either made entirely with, or depending entirely on our wool, greater quantities from Holland, &c. being employed in those fabricks.

The

The bayettes of Beauvais, which have been supposed to rival the bays of Colchester, and have been mentioned repeatedly as made of English wool, have none in them; they are made of the wools of Brie, of Sologne, of Italy, and mixed with the inferior wools of Spain.

After this recital, what are we to think of the pretended immense quantity which the monopolists would make us believe the smuggled wool amounts to? It appears that the accounts are absolute exaggerations. There is enough exported, as appears by the preceding paper, to enable men, instigated by an eager wish to sink the price at home, to magnify a trifle into an object of the greatest importance; and to make every exertion that avarice working on folly and credulity can invent, in order to carry measures into effect, injurious to the property and tyrannical to the feelings of the whole landed interest.

It must be evident to every one, that the actual export of 13,000l. in wool is sufficient to account for every *fact* brought by the advocates of the bill; to effect such an export many opportunities must occur of proving that *some export* actually exists; which, united with seizures of other parcels unsuccessfully attempted to be sent abroad, offer exactly that food for clamour, and that basis for exaggeration, which men so deeply interested in their speculation are apt enough to lay hold of.

But

But let these men be asked, why even 13,000l. worth is smuggled to France? The answer I hope is ready:—Because the price is a *monopoly* one, in England, and a *free* one, in France. On which part of the question I have this observation to make:

It is evident from the preceding table, that France is more in want of wool than England; and the whole tenour of the evidence brought by the manufacturers in every period of our History of Wool has tended to prove the wonderful encouragement given by the French government to that fabrick: The spirit, intelligence and exertions of their policy on that head, have been trumpeted by every manufacturing writer on the subject. That I am correct in this will appear to any one who will consult *The Northamptonshire Manufacturer's Observations on British Wool*, 4to. 1738; the article *France*, in Postlethwaythe's Dictionary; and various passages in Smith's Memoirs. As these gentlemen have so high an opinion of the conduct of France in relation to Wool, it will be proper to examine what is her policy in this point of the export of wool, lying, as she certainly does lie, under the pressure of a greater want of wool than we do, who import singly from Spain.

And here there occurs to me one of the most remarkable instances of political sagacity and acumen in the councils of that kingdom, in relation to trade, that the Annals of Commerce can afford.

In 1711, there happened in Rouffillon a mortality among sheep, in consequence of which, the council issued an arret, June 15th of that year, prohibiting the export of sheep from that province, which continued till 1717. In 1740, there was another epidemical distemper which became general; June 7th of that year, the council again issued an arret, prohibiting export. When the distress was over, the edict not being repealed, an export took place clandestinely; so that in 1762, three thousand were seized smuggling from Rouffillon into Spain. This fact bringing the business again to the consideration of the council, they reflected that the prohibition of 1740 ought to have lasted no longer than the occasion, and that a clandestine export taking place was alone proof sufficient, that such export should be made legal. Accordingly, August 17th, 1763, a new arret allows the free exportation of sheep out of the kingdom, also of oxen, cows, &c. paying a very small duty of 7 deniers* on a sheep worth 6 livres †, and 10 sous ‡ on an ox worth 100 livres; — “because the best means of repairing losses of that kind, is, to leave to cultivators the liberty of renewing their stock, and to encourage them with the hope of an advantageous sale, whether abroad or at home, which cannot take place in a state of prohibition, which

* Seven deniers is about a farthing. † A livre is about 10½d.

‡ A sol is ½.

deprives

deprives the farmer of the facility of converting his products to the best account." The effect was very great in all the provinces of the kingdom. Things changed their face in Roussillon; and in 1766, one single bureau registered the export of 24,000 sheep §.

The reader is not in possession of the full force and efficacy of this case, till I inform him, that Roussillon produces the very finest wool in all France, better than much fine Spanish, and yielding the superiority only to the Segovias. It is of this wool that the Londrines, the famous cloths of Cancaffone for the Levant, are made, the most successful manufacture in all France, without exception, so far as concerns the rivalry of England.

Here, then, let us consider the language of French politicks upon a question the most delicate imaginable to their manufacturing interests. One of their greatest fabricks is wrought of this wool, so that they cannot fail considering the increased production of it as beneficial: the whole kingdom also in their estimation, and as marked by the import of wool, wants sheep, what in such a situation is their conduct? THEY ALLOW THE FREE EXPORTATION*. And what is the effect. THE WOOL-GROWER ENCOURAGED, THE MANUFACTURE FLOURISHING, AND THINGS WEARING A NEW FACE.

§ *Carlier*, p. 599.

* The duty is so small as to prove merely a register, and not meant to impede the transport.

This

This example is drawn from the policy of a people who are known to have given the most pointed and unremitted attention to manufactures of any in Europe; and whose solicitude and exertions in their favour are vaunted as exemplary to this country by the very men who now would force a measure, so totally at variance with it. Why do the advocates for a bill content themselves with vague and abstract reasonings in favour of their measures?—Let them appeal to experience: if their proposal is good, let them produce the experiments which have answered: but they are so grossly deficient in this essential point, that they know experience is wholly *against* them; and they are forced to confess it every time they come to Parliament. What is their plea at present? That the laws as they stand are insufficient. Who made those laws? The woolmen. What was the plea in the long contest between 1730 and 1740? The same; the general bill of that period declares the practice *great and notorious*. But now they demand felonies, and transportation? They had them both in the 13th and 14th of Charles II. What was the effect? The 7th and 8th of King William repeals that punishment, declaring it to have been too severe to be executed. And now they come for a renewal of those identical measures which *their own* acts declare to be useless or mischievous. What was the state of the woollen manufacture throughout the long and wise reign of Queen Elizabeth? More flourishing than

than in any other period. Was it owing to prohibitions and felonies? No: THE TRADE IN WOOL WAS AS FREE AS THAT IN WOOLLENS.

Hence, then, I am correctly founded in asserting, that all experience is against them; that they can appeal to no historical documents in their favour. That they can refer to the practice of no other kingdom to support them: And that all analogy fails them, seeing we enjoy a permission to export the raw materials of our other most flourishing manufactures*. To what, then, can they have recourse? To evasions; abstract, confused and unconnected reasonings; to appeals, to circumstances beside the question; to flimsy remarks and personal abuse; in a word, to every thing but FACT, EXPERIENCE, REASON, AND ARGUMENT. While the manufacturers of France are able to support themselves under the fair average price of wool in Europe, ours assert that they should be undone if they were put in the same situation. Why? Because the price of provisions and labour abroad are so much lower.

This has been another of their assertions—for no people in the world are readier with assertions provided you never demand a proof—but the

* Except the products of land, it is almost general; but the landed interest have always been what Sir Robert Walpole described them—the *sheep*, that is laid down to be fleeced at pleasure: Whilst the manufacturers are the *hog*; touch but a bristle of their backs, and the whole stie is in a roar.

contrary is the fact; I shall shew that the price of provisions is very little lower than in England; and in Lille, the town which works up most of the English wool smuggled, dearer than in England; including every article greatly dearer; nor is the nominal price of labour cheaper. I say the *nominal*, that by the day; because the *real* price of labour, the quantity performed in a day, is cheaper in England than in France. But living poorly is a different thing from cheap provisions; and if the woolmen, by way of making their manufacture flourish, would introduce French living among our poor which is the great purport of this part of their argument, I do not know how they can do it more effectually than by the system they are here (in Suffolk) every day pursuing; that of making arbitrary deductions from their earnings; of taking 4d. 5d. and even 6d. from a shilling's-worth of work, and reducing the miserable and helpless beings by that means to worse than French living. If such a scandalous mode of payment was to be attempted to be introduced in France, that sensible people would revolt at the idea:—heavily as they might use the power which a mischievous constitution had given them over the poor, they would feel abhorrence and compunction at insulting their common sense and feelings in such a manner as to tell them *we confess your earnings are 12d. but it is our will and pleasure to pay you no more than 7d.* Such despotism of the
most

most abominable species is not to be met with in France, if you would search for it where alone it is to be found, seek it in the woollen manufacture of England.

As much stress has been laid on the cheap provisions of France, especially in the towns which carry on the woollen manufacture; and as Lille works up more English wool than any other, I will here insert the price of provisions there as I took them on the 5th of last November, a season every one knows to be cheap both for bread and meat:

| | | |
|--------------------------------|--------------------------|------------------------------------|
| Common bread | - - - - - | 1d. per lb. |
| Beef, mutton and veal | - - - | 4d. |
| Pork | - - - - - | 5d. |
| Butter | - - - - - | 7d. |
| Cheese | - - - - - | 7d. |
| Candles | - - - - - | 6d $\frac{1}{2}$. |
| A fowl | - - - - - | 2s. 1d. to 3s. 11d. each |
| A turkey | - - - - - | 3s. 11d. to 4s. 6 $\frac{1}{2}$ d. |
| A goose | - - - - - | 3s $\frac{1}{2}$. |
| A duck | - - - - - | 1s. 1d. |
| A pidgeon | - - - - - | 3d. to 6d. |
| Eggs the dozen | - - - - - | 6 $\frac{1}{2}$ d. |
| A cord of wood of two loads | - | 2l. 12s. 6d. |
| A roziere of coal of about two | } 2s. 7 $\frac{1}{2}$ d. | |
| English bushels | | |

The loads of wood are small, and the price consequently high. House rent must be very high, for every cellar contains crowded families, the for-

fortifications cramming the people together without a power of spreading.

I could insert many other rates of prices tending to prove the same point, that whatever might have been the case formerly, there is no longer any reason to suppose the French can rival us *because of their cheap provisions*, which has been so often repeated by the manufacturing writers. And this pointed conclusion is to be drawn, that if the woollen fabricks of the two nations are any thing near a par, while the French pay so much higher for their wool than ours do, it proves that there is some rottenness and internal defect in our policy of it which ought to be remedied. The cotton workers of this country purchase their raw material of the French themselves, who laid 1d. a lb. duty on the export of it; they pay, besides freight insurance, inland carriage; they work it up by labour nominally dear, they again pay carriage freight, insurance, port charges, and 12 per cent duty, yet land it under this accumulation of charges, and actually undersell the French cotton fabricks 10 per cent. and in some articles above 20. It must not be said that we do it by machines only, because the French have our machines at work, as I saw in various parts of the kingdom. To go through sadlery, and pottery and hardware, would be almost the same picture—If it is the same in woollens I should be glad to hear the monopolists come forward and confess it; because

cause I would then ask why they want new bills of pains and penalties which that confession would prove to be totally useless. But if they assert the contrary, as they usually do, then the amazing contrast between a fabrick pampered with a monopoly, and those that have none, affords a spectacle from which many obvious conclusions may be drawn.

But upon this comparison of the woollen manufactures of the two kingdoms (a subject on which I shall hereafter expatiate more particularly) there is a circumstance which may, perhaps, be allowed in evidence; all the towns in the north of France that are manufacturing, not only Rouen and others in Normandy, where the cotton fabrick is carried on, but in Artois, Picardie, and Flanders, where woollens are the chief fabricks, particularly Lille, Abbeville, Amiens, &c. upon the late noise of a war with England, with one voice expressed their wishes for that event; the commercial treaty had in their ideas proved so injurious to their fabricks that any event which would break or suspend it they considered worth purchasing, even at the expence and hazard of a war. I know this fact personally, and every man that has been in those provinces, with his ears open, must know the same. Whether they were right or mistaken in the idea is another question, but they may be supposed to know their own interests as well as English manufacturers.

It seems, however, to offer the most satisfactory refutation imaginable of the assertions of the friends of the bill, that those towns are able, by means of our smuggled wool, to undersell us.—A plea extremely in their favour provided it was true, but unluckily for their argument, it is totally unfounded.

It is not only amusing but instructive, after measures violently opposed are decided, and have been some time in operation, to reconsider the facts and arguments that had been brought against them. There is a curious opportunity for this in *The compleat investigation of Mr. Eden's Treaty*, 8vo. 3s. Debrett. Where there are formal and well arranged proofs, *founded on facts*, that the manufactures of England would be undone by the treaty; the number of square inches in one piece of French fabrick are set against the number in a similar English one, the prices compared, and stark ruin to England deduced. Unfortunately, the author and his book now stand equally condemned by the best of all courts, that of experience; but, without any such appeal, there ought to have existed previously, knowledge enough in this country of the French fabricks, to have refuted on the spot, that enormous mass of errors and gross mistakes, his performance abounded with from the first page to the last. I have specimens, with the measures and price of most of the manufactures he mentions,
and

and can only now assert in general, that the comparison is almost general in favour of English fabricks, a fact which unites with the universal feeling through the north of France, among the manufacturers of every kind, to reprobate the treaty and wish for a war.

Still, however, the advocates of the bill say, that wool is exported. It certainly is; I have shewn to what amount to France; as to other countries, we may judge tolerably of the nature of the export by that which has this summer been detected at Hull, which the wool committees have blazoned out as a transaction which proves how common it is, and to what a dangerous amount. As the case is a curious one, relative to the spirit and tendency of our wool laws, I will lay an account of it before my readers, as stated by a gentleman in the Custom-house of Hull, concerned in the transaction, as his office called him to be.

340lb. of British raw wool was smuggled on board the Mars, a Swedish ship, bound for Gelfe in Sweden, to which place she belonged.

Anders P. Hemlin, master, 1787.

150lb. ditto, on board the Aurora, in August 1786. Johann Wannberg, master.

160lb. ditto, same ship.

80lb. ditto, on board the Maria Magdalena, in August 1786. Eric Walsbroth, master.

730lb. total, or 26 tod 2lb.

The three ships were all seized in the port of Hull. It was fleece wool, and taken in from the Yorkshire side of the Humber.

Upon seizing the Mars this year, the mate impeached the man that had procured it, and that man impeached the other masters. A deputation from the Leeds committee attended the examinations, but no further circumstances could be gained.

Here, then, is the amount of two years smuggling from Hull, for it is not at all probable that there should be more agents in such a business than the one discovered. But whether there were more or not is immaterial, since the quantities prove, beyond a hesitation, that the wool could not be intended for any manufacture of consideration, but in all probability, from the trifling amount on board each ship, was procured by the master and his crew to supply their families, and possibly a few of their neighbours with wool for their domestic uses. Who ever heard of the Swedish fabricks of Gelfe coming in competition with those of England? But the case proves a fact abundantly, which nearly concerns the landed interest; it shews that the price of wool is so shamefully depressed in England, that there is not a single country on the continent where it is not so much dearer than with us, that there is a temptation to export it. Every country with whom we trade is solicitous to establish manufactures, and yet the legislature of every one has ideas of common justice

tice and honesty strong enough to restrain them from sacrificing one interest in their realms to another; eager as they are for manufactures, they see no reason to cheat their farmers, in order to put the money into the pockets of their cloth workers. This fact, therefore, about which our woolmen have made so much noise, proves nothing more than that wool in small quantities is smuggled; of which no one could ever entertain a doubt from the moment our injurious laws cut off the price here from that common level which all the nations of the world, except ourselves, submit to with profit and advantage.

But on the side of those who oppose the new wool bill, these facts prove a great deal more.—Here are three ships and all their appurtenances seized, and the masters and owners reduced to poverty and ruin, for smuggling this trifling amount of our wool. Without questioning the general principle of the wool laws, and confining our attention for a moment to the case itself, let me demand of the sternest monopolist, of the man most eager to pursue his own interest without looking for a moment beside it, whether this punishment of the imprisonment of some, driving others to abscond, and seizing the property to the ruin of all, is not adequate to the amount and nature of the offence? Are the monopolists disgusted, that they cannot send Joseph Stockill, the man assisting in the above clandestine

clandestine export, to Botany Bay? Do they know so little of human nature, as to suppose that extravagance of punishment will stop smuggling, or that there can be any other radical cure than lessening the temptation? Were these severities that are proposed adopted, we should in the next age see them demand the gibbet to effect what transportation is inadequate to perform; and all these cruel and tyrannical measures would be embraced, not to give wealth and vigour to the state, or by rendering it great and formidable to secure the peace of mankind—but to satisfy the cravings of private interest wantoning in the possession of a monopoly equally injurious to the grower—the poor—and even the fabrick itself; and beneficial only to certain individuals, who thrive on the spoils of every other class.

The verdict lately in the King's-Bench against a Suffex smuggler, though for larger quantities, still proves no more than what has been proved and admitted an hundred times, that wool is smuggled. The account I have given of the amount is abundantly more satisfactory than any conjectures founded on such facts; and rise indeed higher in quantity than any proofs which those detections can be brought to yield.

There is yet another light in which this subject may be viewed and I have reason to say it is much more important than many persons may at first view be willing to imagine.

Manufacturers

Manufacturers strenuously contend that the quantity smuggled is immense, and that the French cannot do without it. These two positions are united in so many publications, that to quote them would be tedious. Granting them by supposition the truth, one of two things must happen, either you will be able to prevent the clandestine export, or you will not.

Suppose the parliament to sacrifice every principle of legislation, and every other interest in the kingdom to your personal one, and should arm you with power sufficient to effect it—Suppose the great point carried, that which you have so long aimed at, a general register of wool—Suppose the legislature ready to tax the wool-grower sufficiently to pay the thousands of controllers, keepers, registers, clerks, weighers, accomptants, &c. necessary in such a plan, which was your proposal forty years ago—Suppose all this done, and in consequence smuggling stopped for a time; what would be the consequence? Why the grower would be put so absolutely at the mercy of the buyer that the price would fall to nothing, and such a state of things being a vast premium on clandestine trade, that would either take place again, or the farmer oppressed on one hand by taxes, and defrauded on the other in price, would abandon the husbandry of sheep altogether. In the meantime what would be the conduct of France? For on that point the
argument

argument bears effectively—granting the supposed necessity of better and longer combing wool than she possesses at present, is it to be supposed she would without exertion see her fabricks sunk and destroyed? Certainly not: She would bend all her endeavours to raise this wool at home: through the rich provinces to the north of Paris she would promote inclosure; she would lay a portion of every farm to grass; she would convert her useless fallows to rich crops of turnips, cabbages, coleworts, winter tares, &c. and her sheep, which are now wintered on straw, would be managed on a totally different system. What would be the result? Can these men be so infatuated and so grossly ignorant as not to know! SHE WOULD RAISE AS FINE COMBING WOOL AS THIS ISLAND PRODUCES; AND HER SALT MARSHES AS LONG AS ANY IN LINCOLNSHIRE*.

Those who know those provinces, know the truth of this assertion. Thus while the principles of monopoly were ruining the product of wool in this island, their collateral effect would drive the French to a conduct that would make it plentiful, and consequently cheap with them. Such are the contradictions of a blind policy, and such the consequences of listening to monopolists.

* This is not the proper place to expatiate more at large on such a point; but I shall on some other opportunity explain this matter fully, and prove it beyond a question.

FARMING

FARMING NEWS.

Paris.

MONSIEUR Collignon, from on board the vessel of Monsieur Peyrouse, (who is at present circumnavigating the globe) has written home an account of a practice in one of the Canary islands of making bread of the roots of fern (*pteris aquilina*) which for that purpose they reduce to flour. Such hints are worth preserving, as in certain exigencies they may be applicable to the use of distressed people.

Kent.

The crops of hops about Canterbury, Sittingburn, &c. were this year very indifferent, and yet at no greater distance than Maidstone they were unusually abundant; one person who had but lately entered into business was offered 4000*l.* for 40 acres as they grew, the buyer to be at all the expence of harvesting, &c. the offer was refused, and the product proved 20 cwt. per acre, which sold at 9*l.* per cwt.—Will some of my readers in that county favour me with an account of those changes in the atmosphere affecting certain districts so fatally while others escaped so remarkably? If the cause was thoroughly understood it might be possible to provide preventions.

Northamp-

Northamptonshire.

By a correspondent of this county I am informed of a fact which I wish may prove correctly reported; it is that Mr. Bakewell, the celebrated breeder, this season let three rams for TWELVE HUNDRED GUINEAS; and that he has been offered a THOUSAND GUINEAS for 20 ewes, and refused it. This is carrying stock to such a perfection as no idea was ever before entertained of: that very ingenious man has established the superiority of his breed to all others, beyond an idea of question or competition.

AVERAGE

AVERAGE PRICES OF CORN FOR
JULY, 1787.

By the standard Winchester Bushel of 8 Gallons.

| | Wheat. | Barley. | Oats. | Beans. |
|---------|--------|---------|-------|--------|
| London, | 5 4 | 3 1 | 2 4 | 3 5 |

COUNTIES INLAND.

| | | | | |
|--------------|------|------|------|------|
| Middlesex, | 5 9 | 3 1 | 2 8 | 4 0 |
| Surry, | 5 8 | — | 2 4 | 4 4 |
| Hartford, | 5 5 | 3 4 | 2 4 | 4 1 |
| Bedford, | 5 4 | 3 1 | 2 3 | 3 9 |
| Cambridge, | 5 6 | — | 1 11 | 3 4 |
| Huntingdon, | 5 4 | — | 2 0 | 3 7 |
| Northampton, | 5 3 | 2 9 | 2 2 | 3 10 |
| Rutland, | 5 9 | 3 8 | — | 4 4 |
| Leicester, | 5 4 | 3 1 | 2 1 | 4 4 |
| Nottingham, | 5 9 | 3 5 | 2 4 | 4 3 |
| Derby, | 5 11 | — | 2 7 | 4 11 |
| Stafford, | 5 3 | 3 4 | 2 7 | 4 3 |
| Shropshire, | 5 3 | 3 1 | 2 3 | 5 0 |
| Hereford, | 4 10 | 3 1 | 2 1 | 4 5 |
| Worcester, | 4 10 | — | 2 5 | 3 7 |
| Warwick, | 4 9 | — | 2 2 | 3 11 |
| Gloucester, | 4 6 | 2 6 | 2 1 | 4 4 |
| Wiltshire, | 5 3 | 2 9 | 2 3 | 4 1 |
| Berks, | 5 3 | 3 1 | 2 4 | 3 7 |
| Oxford, | 4 10 | 3 0 | 2 5 | 3 10 |
| Bucks, | 5 2 | 2 11 | 2 5 | 3 9 |

COUNTIES

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|-----------------|---------------|----------------|--------------|---------------|
| Essex, | 5 4 | 2 9 | 2 3 | 3 7 |
| Suffolk, | 4 10 | 2 7 | 2 1 | 3 2 |
| Norfolk, | 4 7 | 2 6 | 2 1 | — |
| Lincoln, | 5 1 | 2 8 | 2 0 | 3 5 |
| York, | 5 7 | 3 1 | 2 4 | 4 6 |
| Durham, | 5 9 | 3 0 | 2 5 | 4 4 |
| Northumberland, | 5 0 | 3 2 | 2 4 | 4 9 |
| Cumberland, | 5 8 | 2 6 | 2 3 | 4 4 |
| Westmoreland, | 5 7 | 2 9 | 2 4 | 4 11 |
| Lancaster, | 5 10 | — | 2 4 | 4 7 |
| Chester, | 5 10 | 2 9 | 2 3 | — |
| Monmouth, | 5 4 | — | 2 3 | — |
| Somerset, | 5 3 | 3 5 | 2 4 | 4 2 |
| Devon, | 5 7 | 3 0 | 1 10 | — |
| Cornwall, | 5 9 | 3 1 | 1 10 | 4 5 |
| Dorset, | 5 4 | 2 8 | 2 2 | 4 4 |
| Hampshire, | 5 1 | 2 8 | 2 1 | 3 11 |
| Suffex, | 5 2 | 2 8 | 2 2 | — |
| Kent, | 5 1 | 2 11 | 2 4 | 3 3 |
| Wales, | 5 2 | 2 9 | 1 8 | 4 4 |
| General average | 5 4 | 2 11 | 2 3 | 4 1 |

LONDON PRICES OF CORN FOR JULY, 1787.

| <i>Grain.</i> | <i>Quarters.</i> | <i>Price.</i> | <i>Average per Quar.</i> |
|---------------|------------------|-------------------|--------------------------|
| | | <i>£. s. d.</i> | <i>£. s. d.</i> |
| Barley, — | 6154 — | 7551 2 9 | 1 4 8 |
| Beans, — | 2637 — | 6610 9 9 | 1 9 6 |
| Malt, — | 7856 — | 13140 2 10 | 1 13 16 |
| Oats, — | 15594 — | 13613 4 6 | 0 17 5 |
| Peas, — | 706 — | 1274 0 8 | 1 15 7 |
| Rye, — | 248 — | 345 17 5 | 1 8 0 |
| Wheat, — | 16509 — | 38594 10 11 | 2 4 2 |
| | <u>51654</u> | <u>81127 8 10</u> | |

AVERAGE

AVERAGE PRICES OF CORN FOR AUGUST, 1787.

By the standard Winchester Bushel of 8 Gallons.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|---------|---------------|----------------|--------------|---------------|
| London, | 5 8 | 3 0 | 2 3 | 3 7 |

COUNTIES INLAND.

| | | | | |
|--------------|------|------|-----|------|
| Middlesex, | 5 11 | 2 3 | 2 8 | 4 0 |
| Surry, | 6 1 | — | 2 5 | 4 6 |
| Hartford, | 5 11 | 3 11 | 2 5 | 3 11 |
| Bedford, | 5 9 | 3 1 | 2 3 | 3 10 |
| Cambridge, | 5 7 | — | 2 0 | 3 4 |
| Huntingdon, | 5 6 | — | 2 0 | 3 5 |
| Northampton, | 5 9 | 3 4 | 2 3 | 3 9 |
| Rutland, | 6 3 | 3 11 | 2 6 | 4 4 |
| Leicester, | 5 11 | 3 9 | 2 3 | 4 4 |
| Nottingham | 6 3 | 3 10 | 2 4 | 4 3 |
| Derby, | 6 10 | — | 2 8 | 5 0 |
| Stafford, | 5 8 | 3 6 | 2 9 | 4 4 |
| Shropshire, | 5 9 | 3 3 | 2 6 | 5 1 |
| Hereford | 5 8 | 3 1 | 2 1 | 4 7 |
| Worcester, | 5 7 | 3 5 | 2 5 | 3 9 |
| Warwick, | 5 6 | — | 2 4 | 3 11 |
| Gloucester, | 5 5 | 2 7 | 2 0 | 4 3 |
| Wiltshire, | 5 10 | 2 11 | 2 5 | 4 1 |
| Berks, | 5 10 | 3 5 | 2 4 | 3 7 |
| Oxford, | 5 4 | 3 1 | 2 4 | 3 9 |
| Bucks, | 5 7 | 3 0 | 2 4 | 3 9 |

COUNTIES UPON THE COAST.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|-----------------|---------------|----------------|--------------|---------------|
| Essex, | 5 7 | 2 9 | 2 5 | 3 7 |
| Suffolk, | 5 5 | 2 8 | 2 2 | 3 2 |
| Norfolk, | 5 8 | 2 7 | 2 2 | — |
| Lincoln, | 5 8 | 2 10 | 2 0 | 3 7 |
| York, | 6 5 | 3 2 | 2 5 | 4 7 |
| Durham, | 6 10 | 3 10 | 2 7 | 4 0 |
| Northumberland, | 5 10 | 3 4 | 2 5 | 4 6 |
| Cumberland, | 6 1 | 3 0 | 2 5 | 4 10 |
| Westmoreland, | 6 3 | 3 7 | 2 9 | — |
| Lancaster, | 6 2 | — | 2 6 | 4 7 |
| Chester, | 6 0 | 2 10 | 2 5 | — |
| Moamouth, | 6 3 | — | 2 3 | — |
| Somerset, | 6 0 | 3 5 | 2 5 | 4 3 |
| Devon | 6 1 | 3 0 | 1 10 | — |
| Cornwall, | 6 4 | 1 5 | 1 10 | — |
| Dorset, | 6 1 | 2 11 | 2 3 | 4 3 |
| Hampshire, | 5 8 | 2 11 | 2 1 | 3 11 |
| Suffex, | 5 11 | — | 2 4 | — |
| Kent, | 5 4 | 2 11 | 2 4 | 3 3 |
| Wales, | 5 6 | 3 0 | 1 9 | 4 6 |
| General average | 5 10 | 3 2 | 2 3 | 4 1 |

LONDON PRICES OF CORN FOR
AUGUST, 1787.

| <i>Grain.</i> | <i>Quarters.</i> | <i>Price.</i> | <i>Average per quar.</i> |
|---------------|------------------|------------------|--------------------------|
| | | <i>l. s. d.</i> | <i>l. s. d.</i> |
| Barley, | — 4577 — | 5708 10 2 | — 1 4 8 |
| Beans, | — 3998 — | 5778 19 6 | — 7 8 7 |
| Malt, | — 5398 — | 9179 3 11 | — 1 14 2 |
| Oats, | — 18688 — | 17696 15 3 | — 0 18 11 |
| Peas, | — 2428 — | 3982 16 0 | — 1 14 6 |
| Rye, | — 112 — | 157 7 5 | — 1 8 6 |
| Wheat, | — 15526 — | 35834 17 0 | — 2 6 0 |
| | <u>50727</u> | <u>78338 9 3</u> | |

AVERAGE

AVERAGE PRICES OF CORN FOR SEPTEMBER, 1787.

By the standard Winchester Bushel of 8 Gallons.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|---------|---------------|----------------|--------------|---------------|
| London, | 5 7 | 3 0 | 2 4 | 3 6 |

COUNTIES INLAND.

| | | | | |
|--------------|------|------|------|------|
| Middlesex, | 5 7 | 3 1 | 2 7 | 3 11 |
| Surry, | 5 8 | 3 1 | 2 5 | 4 7 |
| Hartford, | 5 8 | 3 6 | 2 4 | 4 3 |
| Bedford, | 5 6 | 2 11 | 2 3 | 3 10 |
| Cambridge, | 5 6 | 2 10 | 2 1 | 3 4 |
| Huntingdon, | 5 2 | 2 9 | 1 11 | 3 6 |
| Northampton, | 5 7 | 3 0 | 2 0 | 3 9 |
| Rutland, | 5 9 | 3 4 | 2 4 | 4 6 |
| Leicester, | 6 1 | 3 4 | 2 2 | 4 5 |
| Nottingham, | 5 10 | 3 0 | 2 4 | 4 4 |
| Derby, | 6 7 | — | 2 6 | 4 8 |
| Stafford, | 6 0 | 3 3 | 2 5 | 4 4 |
| Shropshire, | 5 10 | 3 1 | 2 4 | 5 3 |
| Hereford, | 5 6 | 3 3 | 2 2 | 4 5 |
| Worcester, | 5 11 | 3 4 | 2 4 | 3 8 |
| Warwick, | 5 5 | 2 11 | 2 3 | 3 11 |
| Gloucester, | 5 9 | 2 8 | 2 1 | 4 1 |
| Wiltshire, | 6 1 | 2 11 | 2 4 | 4 4 |
| Berks, | 5 10 | 3 2 | 2 5 | 3 7 |
| Oxford, | 5 4 | 3 0 | 2 4 | 3 8 |
| Bucks, | 5 6 | 3 1 | 2 3 | 3 9 |

COUNTIES UPON THE COAST.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|-----------------|---------------|----------------|--------------|---------------|
| Essex, | 5 4 | 2 10 | 2 3 | 3 7 |
| Suffolk, | 5 3 | 2 8 | 2 1 | 3 1 |
| Norfolk, | 5 7 | 2 6 | 2 2 | — |
| Lincoln, | 5 5 | 2 9 | 2 0 | 3 8 |
| York, | 6 2 | 2 11 | 2 2 | 4 5 |
| Durham, | 6 8 | 3 0 | 2 6 | 3 11 |
| Northumberland, | 5 10 | 3 3 | 2 5 | 4 7 |
| Cumberland, | 6 2 | 2 11 | 2 6 | 4 9 |
| Westmoreland, | 6 2 | 3 2 | 2 4 | — |
| Lancaster, | 5 10 | 2 5 | 2 4 | 4 4 |
| Chester, | 5 9 | 2 9 | 2 2 | — |
| Monmouth, | 5 11 | 3 2 | 2 0 | — |
| Somerset, | 5 10 | 3 1 | 2 2 | 4 0 |
| Devon, | 5 7 | 2 9 | 1 8 | — |
| Cornwall, | 5 10 | 2 9 | 1 8 | — |
| Dorset, | 6 3 | 2 10 | 2 3 | 4 4 |
| Hampshire, | 5 8 | 2 11 | 2 2 | 3 10 |
| Sussex, | 5 5 | 3 0 | 2 4 | 4 0 |
| Kent, | 5 5 | 2 11 | 2 4 | 3 3 |
| Wales, | 5 7 | 3 0 | 1 10 | 4 0 |
| General Average | 5 9 | 3 0 | 2 2 | 4 0 |

LONDON PRICES OF CORN FOR
SEPTEMBER, 1787.

| <i>Grain.</i> | <i>Quarters.</i> | <i>Price.</i> | <i>Average per Quar.</i> |
|---------------|------------------|-------------------|--------------------------|
| | | £. s. d. | l. s. d. |
| Barley, | — 2260 — | 2865 17 5 | — 1 4 8 |
| Beans, | — 3073 — | 4332 17 2 | — 1 8 5 |
| Malt, | — 3631 — | 6190 11 10 | — 1 15 2 |
| Oats, | — 16377 — | 15377 14 2 | — 0 18 8 |
| Peas, | — 2512 — | 4930 10 9 | — 1 11 0 |
| Rye, | — 307 — | 412 15 1 | — 1 6 10 |
| Wheat, | — 8317 — | 18834 11 8 | — 2 5 3 |
| | <u>36477</u> | <u>52944 18 1</u> | |

AVERAGE

AVERAGE PRICES OF CORN FOR OCTOBER 1787.

By the standard Winchester Bushel of 8 Gallons.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|---------|---------------|----------------|--------------|---------------|
| London, | 5 3 | 3 0 | 2 4 | 3 6 |

C O U N T I E S I N L A N D.

| | | | | |
|--------------|------|------|------|------|
| Middlesex, | 5 6 | 3 0 | 2 7 | 3 9 |
| Surry, | 5 2 | 3 0 | 2 4 | 4 6 |
| Hartford, | 5 3 | 3 1 | 2 2 | 4 6 |
| Bedford, | 5 0 | 2 10 | 2 1 | 3 4 |
| Cambridge, | 5 1 | 2 9 | 2 0 | 3 2 |
| Huntingdon, | 4 8 | 2 8 | 1 10 | 3 3 |
| Northampton, | 5 3 | 2 8 | 1 11 | 3 6 |
| Rutland, | 5 3 | 3 0 | 2 2 | 3 0 |
| Leicester, | 5 6 | 2 10 | 2 1 | 4 3 |
| Nottingham, | 5 4 | 2 10 | 2 4 | 4 5 |
| Derby, | 5 10 | 3 2 | 2 5 | 4 6 |
| Stafford, | 6 0 | 3 0 | 2 4 | 4 5 |
| Shropshire, | 5 8 | 2 11 | 2 1 | 5 3 |
| Hereford, | 4 8 | 3 0 | 2 0 | 4 5 |
| Worcester, | 5 8 | 3 0 | 2 0 | 3 6 |
| Warwick, | 5 4 | 2 11 | 2 2 | 3 10 |
| Gloucester, | 5 11 | 2 9 | 2 0 | 4 0 |
| Wiltshire, | 5 7 | 2 8 | 2 4 | 4 4 |
| Berks, | 5 7 | 2 10 | 2 4 | 3 5 |
| Oxford, | 5 3 | 2 9 | 2 2 | 3 9 |
| Bucks, | 5 3 | 2 10 | 2 2 | 3 7 |

C O U N T I E S

COUNTIES UPON THE COAST.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|------------------|---------------|----------------|--------------|---------------|
| Essex, | 5 0 | 2 10 | 2 1 | 3 6 |
| Suffolk, | 5 0 | 2 7 | 2 1 | 3 1 |
| Norfolk, | 5 1 | 2 6 | 2 0 | — |
| Lincoln, | 5 3 | 2 7 | 1 11 | 3 5 |
| York, | 5 7 | 2 10 | 2 0 | 4 6 |
| Durham, | 5 0 | 2 10 | 2 0 | 4 1 |
| Northumberland, | 5 3 | 2 9 | 2 1 | 5 5 |
| Cumberland, | 5 10 | 2 9 | 2 3 | 4 10 |
| Westmoreland, | 6 0 | 3 0 | 2 2 | 3 9 |
| Lancaster, | 5 10 | 2 4 | 2 2 | 4 8 |
| Chester, | 5 7 | 2 10 | 2 0 | — |
| Monmouth, | 5 9 | 2 10 | 1 9 | — |
| Somerset, | 5 7 | 3 0 | 1 11 | 3 11 |
| Devon, | 5 3 | 2 7 | 1 6 | — |
| Cornwall, | 5 7 | 2 8 | 1 7 | — |
| Dorset, | 6 0 | 2 7 | 2 0 | 4 2 |
| Hampshire, | 5 6 | 2 8 | 2 2 | 3 8 |
| Suffex, | 4 10 | 2 10 | 2 2 | 3 10 |
| Kent, | 5 1 | 2 11 | 2 4 | 3 3 |
| Wales, | 5 4 | 2 10 | 1 8 | 4 8 |
| General Average, | 5 4 | 2 10 | 2 1 | 3 10 |

LONDON PRICES OF CORN FOR
OCTOBER 1787.

| <i>Grain.</i> | <i>Quarters.</i> | <i>Price.</i> | <i>Average per Quar.</i> |
|---------------|------------------|------------------|--------------------------|
| | | <i>l. s. d.</i> | <i>l. s. d.</i> |
| Barley, — | 13141 — | 15730 2 0 | 1 4 0 |
| Beans, — | 8600 — | 11196 13 2 | 1 6 0 |
| Malt, — | 8441 — | 14367 6 7 | 1 14 2 |
| Oats, — | 20840 — | 18977 6 4 | 0 18 3 |
| Peas, — | 2643 — | 4685 9 4 | 1 15 1 |
| Rye, — | 523 — | 706 14 9 | 1 6 9 |
| Wheat, — | 14369 — | 29386 13 5 | 2 1 9 |
| | <u>68557</u> | <u>95070 5 7</u> | |

AVERAGE

AVERAGE PRICES OF CORN FOR NOVEMBER, 1787.

By the standard Winchester Bushel of 8 Gallons.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|---------|---------------|----------------|--------------|---------------|
| London, | 5 1 | 2 9 | 2 3 | 3 4 |

C O U N T I E S I N L A N D.

| | | | | |
|--------------|------|------|------|------|
| Middlesex, | 5 5 | 2 11 | 2 6 | 3 2 |
| Surry, | 4 11 | 2 11 | 2 3 | 4 1 |
| Hartford, | 5 0 | 2 10 | 2 1 | 3 10 |
| Bedford, | 4 9 | 2 7 | 2 0 | 3 4 |
| Cambridge, | 4 9 | 2 6 | 1 10 | 3 1 |
| Huntingdon, | 4 7 | 2 5 | 1 9 | 2 11 |
| Northampton, | 5 0 | 2 7 | 1 10 | 2 11 |
| Rutland, | 4 10 | 2 9 | 2 1 | 2 10 |
| Leicester, | 5 1 | 2 9 | 2 1 | 4 1 |
| Nottingham, | 5 2 | 2 9 | 2 3 | 3 9 |
| Derby, | 5 9 | 3 1 | 2 3 | 4 2 |
| Stafford, | 5 7 | 3 0 | 2 3 | 4 4 |
| Shropshire, | 5 7 | 2 10 | 2 1 | 5 3 |
| Hereford, | 4 11 | 3 2 | 2 1 | 3 0 |
| Worcester, | 5 6 | 2 11 | 2 1 | 3 4 |
| Warwick, | 5 1 | 2 10 | 2 2 | 3 9 |
| Gloucester, | 5 5 | 2 8 | 2 0 | 4 0 |
| Wiltshire, | 5 3 | 2 7 | 2 3 | 4 4 |
| Berks, | 5 4 | 2 9 | 2 2 | 3 1 |
| Oxford, | 4 10 | 2 7 | 2 2 | 3 6 |
| Bucks, | 5 0 | 2 9 | 2 1 | 3 2 |

C O U N T I E S

COUNTIES UPON THE COAST.

| | <i>Wheat.</i> | <i>Barley.</i> | <i>Oats.</i> | <i>Beans.</i> |
|------------------|---------------|----------------|--------------|---------------|
| Essex, | 4 10 | 2 7 | 2 1 | 3 3 |
| Suffolk, | 4 9 | 2 5 | 2 0 | 2 9 |
| Norfolk, | 4 6 | 2 5 | 2 1 | — |
| Lincoln, | 5 1 | 2 6 | 1 11 | 3 5 |
| York, | 5 6 | 2 11 | 2 0 | 4 6 |
| Durham, | 5 0 | 2 10 | 1 11 | 4 0 |
| Northumberland, | 4 10 | 2 7 | 1 11 | 4 6 |
| Cumberland, | 6 0 | 2 10 | 2 4 | 5 2 |
| Westmoreland, | 6 0 | 3 0 | 1 11 | — |
| Lancaster, | 6 0 | 2 10 | 2 3 | 4 11 |
| Chester, | 5 0 | 2 11 | 2 1 | — |
| Monmouth, | 5 9 | 2 10 | 1 10 | 3 3 |
| Somerset, | 5 6 | 2 8 | 1 11 | 3 7 |
| Devon, | 5 5 | 2 7 | 1 6 | — |
| Cornwall, | 5 5 | 2 9 | 1 6 | — |
| Dorset, | 5 8 | 2 6 | 1 11 | 4 0 |
| Hampshire, | 5 2 | 2 6 | 2 1 | 3 7 |
| Suffex, | 4 9 | 2 9 | 2 1 | 3 8 |
| Kent, | 4 11 | 2 10 | 2 3 | 2 11 |
| Wales, | 5 3 | 2 9 | 1 7 | 4 11 |
| General average, | 5 3 | 2 8 | 2 0 | 3 8 |

LONDON PRICES OF CORN FOR
NOVEMBER, 1787.

| <i>Grain.</i> | <i>Quarters.</i> | <i>Price.</i> | <i>Average per Quar.</i> |
|---------------|------------------|-------------------|--------------------------|
| | | <i>£. s. d.</i> | <i>£. s. d.</i> |
| Barley, — | 20447 — | 23152 3 0 | 1 2 8 |
| Beans, — | 8761 — | 10475 3 5 | 1 3 9 |
| Malt, — | 11543 — | 18701 10 1 | 1 12 3 |
| Oats, — | 29138 — | 25364 19 0 | 0 17 4 |
| Peas, — | 6023 — | 12226 11 5 | 1 13 1 |
| Rye, — | 1408 — | 1966 6 7 | 0 17 10 |
| Wheat, — | 21044 — | 42808 12 1 | 2 0 4 |
| | <u>93364</u> | <u>134695 5 7</u> | |

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YOUNG on draining, 162

Yarn imported from Ireland

Yarmouth, quantity, 457











